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SOCIETE BELGE DE MALACOLOGIE

The Cerithiopsidae (Gastropoda) of Reunion Island (Indian Ocean)

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KEYWORDS. Cerithiopsidae, Reunion Island, Indian Ocean.

MOTS CLES. Cerithiopsidae, Réunion, Océan Indien.

ABSTRACT. The authors have collected 83 species of Cerithiopsidae on Reunion Island, Indian Ocean. After a revew of literature, and after having examined material in the Museum collections in Berlin, Cardiff, London, Manchester and Paris, 16 species were recognized as known species, 23 were left aside on account of unsufficient material.
- 44 species are described as new.
- 2 new genera are proposed: *Belonimorphis* (type species *Belonimorphis belonimorphis*); *Koilofera* (type species *Koilofera koilofera*).
- New synonymies: *Cerithiopsis aeolomitres* Melvill & Standen, 1896 = *Cerithiopsis* (*Horologica*) *balteata* Watson, 1886.
- New name: *Cerithiopsis* (*Mendax*) *melvilli* nom. nov. = *Cerithiopsis aurantiaca* Melvill & Standen, 1896, preoccupied.

RESUME. Les auteurs ont pu rasssembler des spécimens de Cerithiopsidae de la Réunion, appartenant à 83 espèces. Après une revue de la littérature et comparaison avec le matériel des Museums de Berlin, Cardiff, Londres, Manchester et Paris, 16 espèces ont été répertoriées comme déjà connues, et 23 ont été laissées en dehors de l'étude pour cause de matériel encore insuffisant.
- 44 espèces sont décrites comme nouvelles
- 2 nouveaux genres sont proposés: *Belonimorphis* (espèce type *Belonimorphis belonimorphis*); *Koilofera* (espèce type *Koilofera koilofera*).
Synonymes nouveaux: *Cerithiopsis aeolomitres* Melvill & Standen, 1896 = *Cerithiopsis* (*Horologica*) *balteata* Watson, 1886.

- Nouvelle dénomination: *Cerithiopsis* (*Mendax*) *melvilli* nom. nov. = *Cerithiopsis aurantiaca* Melvill & Standen, 1896, preoccupé.

INTRODUCTION

The family Cerithiopsidae A. & H. Adams, 1854 (type genus *Cerithiopsis* Forbes & Hanley, 1850) was established for turreted shells, small or very small, with a conical elevated and narrow spire, or fusiform or pyriform, the teleoconch whorls sculptured with spiral cords and often with axial ribs, their intersections nodulose; aperture oval with a short anterior canal; protoconch variable, either short or more often elevated and very fragile, either smooth or finely sculptured.
Since the publication of The Cerithiopsidae of New Zealand by B.A. Marshall (1978), a growing importance has been given to the features of protoconch and radula among the classification characters. A. Nutzel (1992) proposed to give a family rank to the Eumetulinae of preceeding authors, considering thus two families among the Cerithiopsoidea, namely the Eumetulidae and the Cerithiopsidae. But none of the species collected in Reunion, except one, was ever found alive; hence, radulae were not studied, and we could not follow the taxonomic concepts based on their characters. So, following Marshall, we will consider a single family, the Cerithiopsidae sensu lato.

The Cerithiopsidae on Reunion

The earliest catalogues of molluscs in Mascarene Islands (Bernardin de Saint-Pierre in 1773, d'Argenville in 1780, Sganzini in 1843) do not include any Cerithiopsidae.

Nor did Deshayes (1863) cite any in his "Catalogue des Mollusques de la Réunion".

Lamy (1909) described *Cerithiopsis blandi* Vignal, after a single specimen from Madagascar, and several specimens from Reunion, Saint-Pierre, all of them syntypes. Protoconchs of the species remained unknown. 2 boxes labelled "syntypes" are registered in the MNHN typotheque: all specimens except 2 match the figure of Lamy, and in spite of the lack of protoconchs, can be certainly identified as *Horologica turrigera* (Watson, 1886), of which Cerithiopsis blandi is thus a junior synonym. Furthermore, the boxes labelled *C. blandi* contain 2 other different specimens: one of them, deprived of its protoconch, matches the teleoconch of our *Mendax penneyi*, n.sp., but could nevertheless *be Cerithiopsis hedista* Melvill & Standen, 1896; the other specimen, very worn and without protoconch, cannot be identified with certainty, but resembles our new species *Joculator keratochroma*.

Descriptions of the marine fauna in the neighbouring island Mauritius are more numerous: although neither Lienard Elize (1877) nor von Martens (1880) quote any Cerithiopsidae. Several samples from Mauritius are present in the Melvill-Tomlin collection, namely *Cerithiopsis adelpha*, *C. aurantiaca*, *C. catenaria*, *C. eutrapela*, *C. fosterae*, *C. mathildaeformis*. Viader in his Revised Catalogue of species from Mauritius (1937), quoted 6 species of Cerithiopsidae, namely : *Cerithiopsis catenaria* Melvill & Standen, 1896, *C. fosterae* Melvill & Standen, 1896, *C. mathildaeformis* Melvill, 1907 (= *Metaxa*, Triphoridae), *C. pulvis* (Issel, 1869), *C. subreticulata* (Dunker, 1861) and *Seila alfredensis* Bartsch, 1915.

During those last 40 years, we have collected in Reunion specimens belonging to 83 species of Cerithiopsidae. They consist mostly in specimens found dead in hand-dredged sand from depths accessible by scuba diving, that is from 10 to 70 m. Many specimens lack their protoconch, in which case only those with a particular coloration could be identified. Among these 83 species, 16 could be identified as known species; 44 are new species and are described; for 23 species, material was not sufficient to allow identification or an original description. The latter will not be studied in this paper. Most of species seem to be rare, with sometimes only a few specimens collected. The commonest species *Horologica turrigera* (Watson, 1886) was the only species to be found alive. In spite of our research, we have not found Cerithiopsidae specimens on or in sponges.

Assigning our species to genera.

The earlier descriptions have most often been based on specimens lacking a protoconch, and generic characters relate only to the teleoconch. Thus comparison and identification with earlier type material, figures, and descriptions, are difficult. However, in more recent studies, a growing importance has been given to protoconch characters, primarily its smooth (for genera *Cerithiopsis, Joculator, Horologica*) or sculptured appearance (genera *Mendax, Dizoniopsis, Prolixodens).* Examination of the protoconchs at high magnification and SEM, may show other characters, such as granulose or strongly mamillated patterns, small and low reliefs of various forms, or small and short axial riblets. When more material is available, these characters may be seen to be of generic significance, but in the present paper, we will consider them as minor characters.

Among the species with obviously beaded spiral cords on the teleoconch, species with a smooth protoconch are easily referred to genera.

Cerithiopsis Forbes & Hanley, 1850 (Type species: *Cerithiopsis tubercularis* (Montagu, 1803) from Europe), includes species with a high teleoconch, with numerous whorls, not constricted at base, and with a protoconch made of 3 to 6 smooth whorls that is without cords or ribs, sometimes granulose, especially on the first whorl. 15 of our species may be attributed to this genus sensu lato, among which 2 are known species, and 10 are new ones. The lack of radulae on our specimens does not allow us to refer them to allied genera based on radular characters.

Joculator Hedley, 1909 (type species: *Cerithiopsis ridicula* Watson,1886, from Queensland) includes small or very small species, bulbous or ovate in shape, more or less constricted at base, bearing 3 beaded spiral cords from the earliest whorls of the teleoconch, with an elevated smooth or punctate protoconch, but without any cords or ribs. 32 of our species are assigned to this genus, among which 5 are known species and 16 are new ones.

Horologica Laseron, 1956 (Type species *Horologica bicolor* Laseron, 1956, from Queensland) was established for ovate species constricted at base like *Joculator*, with a smooth or punctate protoconch, but with only 2 beaded spiral cords on teleoconch whorls. Authors have considered this genus as poorly separated from *Joculator*, some species with 2 beaded spiral cords on earlier whorls having 3 of them on last whorl. However following Marshall, we will consider species showing this character as *Horologica.* 16 of our species are assigned to this genus, among which 7 are known species, and 4 are new ones.

Our species with beaded spiral cords on teleoconch, and with a ribbed protoconch, are not so easily assigned to genera. These ribbed protoconchs may be classified into 4 different types : Some of them show axial ribs extending from suture to suture, with smooth or punctate intervals (Type 1) ; other ones have the same axial ribs and intervals, with a narrow row of small axial riblets in suture (Type 2) ; other ones show axial ribs extending from suture to suture, and finer spiral cords in their intervals (Type 3) and lastly, other ones bear axial ribs limited to the lowest two thirds of whorls, the upper third being smooth or punctate and appearing more or less concave (Type 4).

Dizoniopsis Sacco, 1895 (type species *Cerithium bilineatum* Hörnes, 1855, type locality the Tertiary formations of Piemont) was created for fossil shells with only 2 beaded spiral cords on teleoconch whorls, but the original description did not mention protoconch, and the figure does not show it. Some authors have assigned to this genus shells with smooth protoconchs (Gougerot & Le Renard). But the genus was redefined by Nordsieck, (1968), the type of the genus having, according to him, a protoconch with a smooth first whorl, and following whorls with axial riblets extending from suture to suture. This genus was used by Glibert (1973) for shells with pupoid shape, with 2 beaded cords on teleoconch whorls, and protoconchs with axial ribs. We will follow these authors, and consider as *Dizoniopsis* sensu stricto, species defined as above. We provisionally assign to the genus sensu lato, shells with 2 beaded cords on the teleoconch, and a ribbed protoconch of type 3 (with spiral cords in intervals) and type 4 (axial ribs limited to the lower 2/3 of whorls). A total of 3 of our new species are assigned to the genus *Mendax*, Finlay, 1927 (Type species *Cerithiopsis trizonalis* Odhner, 1924, from New Zealand). Marshall (1978) restricted the genus to species with a short paucispiral protoconch, weakly delimited from teleoconch, with a smooth first whorl, following whorls with axial ribs extending from suture to suture, and a more or less high teleoconch, more or less constricted at the base, with 3 beaded cords per whorl. We assign to the genus 4 of our new species, though their protoconchs are rather high. We provisionally assign to the genus one more species with a ribbed protoconch of type 3 (spiral cords in intervals between ribs).

Prolixodens Marshall, 1978 (type species *Cerithiopsis infracolor* Laseron,1951, type locality Long Reef, NSW, Australia) was established for narrow and slender shells with straight sides, a ribbed protoconch of type 4 (axial ribs limited to the lower 2/3 of whorls), and 3 beaded spiral cords on teleoconch whorls. 2 of our species are assigned to this genus, as new species.

In due course, species with protoconch of type 3, or species with protoconch of type 4, may be thought to deserve new genera, based on protoconch characters only, and including species with 2 or 3 beaded cords on the teleoconch whorls.

Two of our species with beaded spiral cords show very unusual characters.

One of them shows 2 beaded spiral cords per teleoconch whorl, and a protoconch with a flat summit and 3 whorls bearing a strong rounded spiral pad at their lower part, the median and upper parts of whorls being concave: this protoconch sculpture may recall protoconchs illustrated by Marshall (1973) in the genus *Seila*, with a quite different teleoconch. It is nearer to the protoconch of *Inella spina* Marshall, 1983, which is sinistral. For this species, we propose a new genus, *Koilofera* (from Greek, meaning bearing a concavity); type species: *Koilofera koilofera*, n.sp.

The second species is a very high and slender shell, with teleoconch sides slightly convex and a reticulated more or less strongly beaded sculpture, and with a strongly elevated protoconch of 3.5 whorls bearing 2 saillant equal and well separated spiral keels, with smooth intervals. We could not find such protococonchs in former descriptions of Cerithiopsidae. For this shell, we propose the new genus *Belonimorphis* (from Greek, meaning needle-shaped): type species: *Belonimorphis belonimorphis* n.sp.

Lastly, 4 of our species (2 of which as new species) are assigned to the genus *Seila* A. Adams, 1861 (Type species: *Triphoris dextroversus* Adams & Reeve, 1860, from China Seas). This genus was established for species with high conical or slightly convex teleoconch, with smooth and unbeaded spiral cords, very close-set fine axial threads in the intervals between spiral cords and a variable protoconch.

Abbreviatons used

MM	Manchester Museum.
MNHN	Museum national d'Histoire naturelle, Paris.
MNK	Museum für Naturkunde, Berlin.
NHM	Natural History Museum, London.
NMW	National Museum of Wales, Cardiff.
SEM	Scanning Electron Microscope.

SYSTEMATICS

Genus ***Cerithiopsis*** Forbes & Hanley, 1850

Type species: *Cerithiopsis tubercularis* (Montagu, 1803), Europe: elongate shell, not constricted at base, with 3 beaded spiral cords per teleoconch whorl, protoconch smooth or punctate, without any axial rib or spiral cord, except sometimes for a spiral carina on last half-whorl.

Cerithiopsis eutrapela Melvill & Standen, 1896.

Plate 1, A; colour plate I, Fig. 1)

Material examined. 1 spmn MNHN; 30 spmns with complete protoconch, coll. M.Jay; 11 spmns coll. J.Drivas.

Description. Shell conical, elevated, and slightly oval, somewhat wider than the related species; angle at the summit of teleoconch 35°. Protoconch strong and high of 3,5 convex smooth whorls, finely punctate under SEM, with very fine close-set axial threads in suture; its limit from teleoconch clear-cut and oblique, its last 1/4 whorl with a median spiral carina. Teleoconch of 8 or 9 convex whorls, bearing 3 beaded spiral cords, the upper one slightly weaker. One weak spiral thread between the cords, on the 2 last whorls.

Axial ribs, weaker than cords, crossing them at right angles, with one rounded bead at each intersection, beads numbering 23-24 per whorl. A fourth weaker and more finely beaded spiral cord emerging from suture at base of last whorl. Base smooth. Aperture circular. Colour creamy-white, the earlier whorls more neatly white, protoconch brown.
Size: maximum total height 6.5 mm; width at base 2 mm; height of protoconch 0.42 mm; width of protoconch at base 0.28 mm.

Locality. Found dead in hand-dredged sand at 10-20 m, off Saint-Gilles-les-Bains.

Remarks. Our specimens were compared and found identical to the holotype of Melvill & Standen, in MM: a single specimen without protoconch; and to the syntypes in NMW (lot Nr Z.1955.158.02262) from Lifu, Loyalty Isl. They resemble also another lot of the Melvill-Tomlin collection, in NMW (lot Nr Z.1955.158.02268) from Mauritius.

Cerithiopsis fosterae Melvill & Standen, 1896.

Plate 1, B; colour plate I, Fig. 2

Material examined. 1 spmn MNHN; 13 spmns with complete protoconch coll. M. Jay; 40 spmns with broken protoconch coll. M. Jay; 11 spmns coll. J. Drivas.

Description. Shell elevated and conical, very elongate and slender, summit angle 22°. Protoconch prolonging the general shape of teleoconch, comprising 5 convex smooth whorls, with under SEM some very fine axial threads above suture on first whorl, and a weak spiral cord in suture between the 4th and 5th whorls; limit from teleoconch oblique and well marked, the last 1/4 whorl bearing a median spiral carina, more or less visible. Teleoconch of 10 strongly convex whorls. Suture deeply impressed. 3 beaded spiral cords per whorl, the uppermost one somewhat weaker and slightly constricted, but visible from first whorl. Axial ribs weaker than cords, crossing them and joining the beads, obliquely in the first interval, axially in second one, and extending from upper to lower suture, but discontinuous from one whorl to another. Axial ribs and beads numbering 26 to 28 per whorl. A fourth spiral cord, weaker and smooth, emerging from suture at base of last whorl. One more weak and smooth spiral cord on base. Aperture rounded. Colour white, suture and upper beaded cord very pale brown in fresh specimens, but this colour fades rather fast. Protoconch white.
Size: maximum total height 6.1 mm; width at base 1.4 mm; height of protoconch 0.56 mm; maximum width of protoconch 0.30 mm.

Locality. Found dead in hand-dredged sand at 30-55 m, off Saint-Gilles-les-Bains.

Remarks. Our specimens appear identical to the holotype of *Cerithiopsis fosterae* Melvill & Standen, 1896, type locality Loyalty Islands, in MM: a single specimen that matches the figure of Melvill & Standen, with a protoconch broken at summit and 3 whorls left. They are identical also to the syntypes of Melvill & Standen in NMW (lot Nr Z.1955.158.00205) five specimens from Lifu: only one specimen has a protoconch of 3 whorls, with broken summit. Furthermore our specimens are identical to specimens in two other lots of the Melvill-Tomlin collection in NMW, from Mauritius, of which none has a complete protoconch. The original description of Melvill & Standen described a protoconch of 3 whorls instead of 5, without mentioning the broken summit, and described 2 beaded spiral cords on teleoconch whorls; the third and upper cord, weaker and constricted, not mentioned in the original description, is nevertheless visible on Melvill & Standen's figure, and on the types and syntypes.

Cerithiopsis boucheti n.sp.

Plate 1, C; colour plate I, Fig. 3

Material examined. 2 spmns MNHN; 37 spmns coll. M. Jay, all with complete protoconch; 6 spmns coll. J. Drivas.

Description. Shell conical, elevated, very slightly oval. Protoconch nearly cylindrical, of 3 strongly convex whorls, the earlier one rounded, the following two equal, their diameter smaller than the first whorl of teleoconch; whorls looking smooth, but finely punctate under microscope; mamillated with close-set hemispherical tubercles under SEM; last whorl well separated from teleoconch by an oblique line with change of colours, but the 3 spiral cords of teleoconch have appeared and are weakly visible on the last 1/4 whorl of protoconch. Teleoconch of 7 slightly convex whorls, with 3 beaded spiral cords per whorl, equal in importance on last whorl, the upper cord a little weaker and retracted on earlier whorls. Very fine axial riblets crossing the cords at right angles, with a rounded bead at each intersection, beads numbering 22-23 per whorl. Very close-set fine axial striae visible in the intervals between cords, under strong enlargement. A fourth finer and more weakly beaded spiral cord emerging from suture at base of last whorl; beads becoming weaker, and axial riblets more neatly visible on last part of last whorl. One more weak smooth cord on base. Aperture circular. Colour plain glossy brown, protoconch white.
Size: holotype total height 4.5 mm, width at base 1.3 mm; height of protoconch 0.49 mm; width of protoconch at base 0.36 mm.

Type locality. Saint-Gilles-les-Bains, in hand dredged sand at 10-20 m, between Hermitage and Saint-Paul Bay.

Type material. Holotype and paratype 1 in MNHN, paratypes 2 to 15 coll. M. Jay; paratypes 16 to 18 coll. J. Drivas.

Etymology. Dedicated to Philippe Bouchet, curator of the Mollusca section in MNHN.

Remarks. Eight of our species look alike by their high teleoconch, with 3 spiral cords, the upper one weaker and retracted to penultimate whorl, and by their colour more or less golden brown. They are undistinguishable on teleoconch characters only, in spite of slight differences in their width, and differ mostly by their protoconch: 5 of them are *Cerithiopsis*, with smooth or punctate protoconchs. *C. hadfieldi* n.sp. has a conical protoconch of 5 whorls, and the widest teleoconch. *C. boucheti* n.sp. has a more cylindrical protoconch of 3 whorls; *C.pickeringae* n.sp. has a conical protoconch of 4 whorls with rounded apex. *C. nutzeli* n.sp. is a shorter shell with a protoconch of only 2 whorls. *Cerithiopsis seddonae* n.sp. differs from other ones by its wider protoconch of 3.5 whorls, by its shorter teleoconch, and by its upper cord more retracted.

Three other species may be confused with the five preceeding ones but have protoconchs with axial ribs: well visible for *Mendax metivieri* n.sp. and *Mendax ribesae* n.sp.; for *Mendax mascarenensis* n.sp. axial riblets on protoconch are low and have to be searched under oblique light.

Moreover, these species resemble the species labelled *Cerithiopsis brunnea* Thiele from SW Australia (MNK lot Nr 67484), which has only the last smooth whorl of its broken protoconch left, but the teleoconch of which bears larger and less numerous beads (18 per whorl instead of 22). *C. exquisita* Sowerby, 1897 (Natal, South Africa) differs from our species in that its teleoconch whorls are more convex, and its upper cord more retracted. The *Joculator* species with the same colour are much smaller and constricted at base.

Cerithiopsis hadfieldi n.sp.

Plate 1, D; colour plate I, Fig. 4

Material examined. 2 spmns MNHN, 17 spmns coll. M.Jay, (13 with complete protoconch).

Description. Shell conical, high, slightly fusiform, summit angle of teleoconch 30°. Protoconch prominent and obviously conical, of 5 smooth convex whorls, appearing punctate under microscope; apex rounded, suture wide bearing fine riblets, axial or slightly oblique, stronger and more widely-spaced than on other protoconchs of the same type and numbering about 20 per whorl; suture slightly darker than protoconch whorls; limit from teleoconch clear-cut and oblique. Teleoconch of 8 convex whorls, bearing 3 beaded spiral cords per whorl, the uppermost one a little weaker and constricted but visible from the first whorl. Axial ribs, weaker than cords, crossing them at right angles, with a bead at each intersection; beads more or less strong and rounded numbering 23-24 per whorl. Intervals between cords very finely axially striated. A fourth smooth cord emerging from suture at base of last whorl. Base excavated, smooth; last whorl and aperture expanded on some specimens. Aperture circular. Colour more or less dark brown, protoconch white.

Size: maximum total height 5.6 mm; maximum width 1.4 mm; height of protoconch 0.82 mm; width of protoconch at base 0.32 mm.

Type locality. Found dead in hand-dredged sand at 45 m, off Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN, paratypes 2 to 7 coll. M. Jay.

Etymology. Dedicated to the Rev. James Hadfield, who collected the first specimens of that species in Lifu.

Remarks. Our specimens were compared and found similar to the syntypes of *Cerithiopsis catenaria* Melvill & Standen, 1896, in NMW, (lot Nr Z.1955.158.00193): 3 specimens from Lifu, one of them with protoconch. They are identical also to the specimens of another lot in the Melvill-Tomlin collection in NMW (lot Z.1955.158.02263) from Mauritius. However, the holotype of the species in MM collection (Lot EE 3714) differs from the NMW syntypes by its protoconch, only 1/4 of last whorl of which remains, bearing 4 strong and rounded axial ribs; and also in its teleoconch possessing elevated and narrow spiral cords, darker than ground, and beads a little more numerous: this specimen, using our criteria, should be assigned to the genus *Mendax*. The specimens labelled syntypes in NMW thus belong to another and undescribed species, together with our specimens from Reunion; for it, we propose the name *Cerithiopsis hadfieldi*.

Cerithiopsis iochrous n.sp.

Plate 1, E; colour plate I, Fig. 5

Material examined. 2 spmns MNHN, 10 spmns coll. M. Jay, (5 spmns with complete protoconch); 2 spmns coll. J. Drivas.

Description. Shell very high and slender with nearly straight sides, summit angle 20°-22°. Protoconch prolonging the general outline of teleoconch, comprising 5 convex whorls, smooth under SEM, without axial threads, but with a weak spiral cord in suture between the 4th and 5th whorls: its limit from teleoconch clear-cut and oblique, the last 1/4 whorl bearing a spiral carina beginning the sculpture of teleoconch. Teleoconch of 11 to 14 whorls, bearing 3 beaded spiral cords per whorl, high and narrow, the uppermost one weaker and constricted. Axial ribs a little weaker than the cords, numbering 21-22 on last whorl; ribs slightly oblique in the first interval between

cords, and axial in second one, and extending from upper to lower sutures, but not from one whorl to another. A small bead at each intersection. One fine spiral thread between the cords on last whorl. A fourth spiral cord emerging from suture at base of last whorl. One additional weak smooth spiral cord on base. Aperture circular. Colour uniform pale violet, a little darker on earlier whorls, protoconch white. This colour fades more or less swiftly.
Size: holotype height 5.5 mm, width at base 1.2 mm; height of protoconch 0.56 mm, maximum width of protoconch 0.33 mm.

Type Locality. Saint-Gilles-les-Bains, found dead in hand dredged sand at 10-20 m.

Type material. Holotype and paratype 1 in MNHN, paratypes 2 to 6 coll. M. Jay, paratypes 7 and 8 coll. J. Drivas.

Etymology. Named on account of its colour, from Greek meaning violet.

Remarks. This species is very near to *Cerithiopsis fosterae* Melvill & Standen, 1896, and differs from it only in its colour and lack of fine axial threads on the protoconch. It could perhaps be a colour variation of this last species. One juvenile specimen among the syntypes of *C. fosterae* in NMW has this colour and belongs to this species.

Cerithiopsis jousseaumei n.sp.

Plate 1, F; colour plate I, Fig. 6

Material examined. 2 spmns MNHN, 86 spmns coll. M.Jay, (21 with complete protoconch) 10 spmns coll. J. Drivas.

Decription. Conical, high and slender shell, with nearly straight sides, summit angle of teleoconch 20°. Protoconch of 4.5 convex whorls, with a weak and narrow spiral thread in suture, its last whorl with progressive development of adult sculpture, but limit from teleoconch marked by clear-cut oblique change of colour. Teleoconch of 10 to 12 whorls bearing 3 subequal beaded spiral cords per whorl; axial ribs weaker than cords, crossing them at right angles, with a rounded bead at each intersection; beads appearing close-set, and numbering 25 per whorl. The beads of the uppermost spiral cord slightly stronger than others. A fourth weaker and finely beaded cord emerging from suture at base of last whorl. Another smooth very weak cord on base. Aperture quadrangular with rounded angles. Colour golden brown, glossy on fresh specimens, becoming paler with age; protoconch paler, base a little darker.
Size: holotype total height 6 mm, width at base 1.5 mm; height of protoconch 0.35 mm; width of protoconch at base 0.25 mm.

Type locality. Saint-Gilles-les-Bains, found dead in hand-dredged sand at 10-30 m, off Boucan-Canot beach.

Type material. Holotype and paratype 1 in MNHN, paratypes 2 to 10 coll. M. Jay; paratypes 11 to 14 coll. J. Drivas.
Etymology. Dedicated to F. Jousseaume, who described new species of Cerithiopsidae from Red sea and Mascarenes Isl..

Remarks. This species differs from other Reunion species in its 3 rows of subequal beads, its more numerous and close-set beads, and its poorly marked suture. *Cerithiopsis orientalis* Preston, 1905 (type locality Ceylon) has a wider and deeper suture, and is paler in colour. *Cerithiopsis infracolor* Laseron, 1951 (type locality Long Reef, NSW, Australia) has a similar shape, size and colour, but is easily distinguished from it by its costate protoconch.

Cerithiopsis lamyi n. sp.

Plate 2, A; colour plate I, Fig. 7

Material examined. 2 spmns MNHN, 6 spmns coll. M. Jay (5 with complete protoconch).

Description. Shell conical, high, very narrow and slender, base not constricted, summit with a wide protoconch more shortly conical than the general outline of the shell. Large conical protoconch of 5 smooth whorls, more convex at their lower part, resembling a pagoda's roof, with a wide suture; last whorl equal in diameter to first whorl of teleoconch, the limit between both marked by the sudden appearance of the 3 adult cords and change of colour, along a vertical line; earlier whorls tappering to narrow rounded apex. Teleoconch of 8 whorls, suture wide and deeply impressed; 3 spiral cords per whorl, subequal, crossed at right angles by well developed axial riblets, with one rounded bead at each intersection; beads rather small, numbering 17 per whorl. A fourth spiral cord, weaker and finely beaded, emerging from suture at base of last whorl. A fifth smooth cord on base. Aperture circular. Colour horn or dark cream, protoconch a little paler.
Size: holotype total height 1.5 mm, width at base 0.5 mm; height of protoconch 0.40 mm; width of protoconch at base 0.32 mm.

Type Locality. Found dead in hand-dredged sand at 30m, off Souris-Chaude, Trois-Bassins.

Type material. Holotype and paratype 1 in MNHN; paratype 2 to 5 Coll. M. Jay.

Etymology. Dedicated to Edouard Lamy, French conchologist.

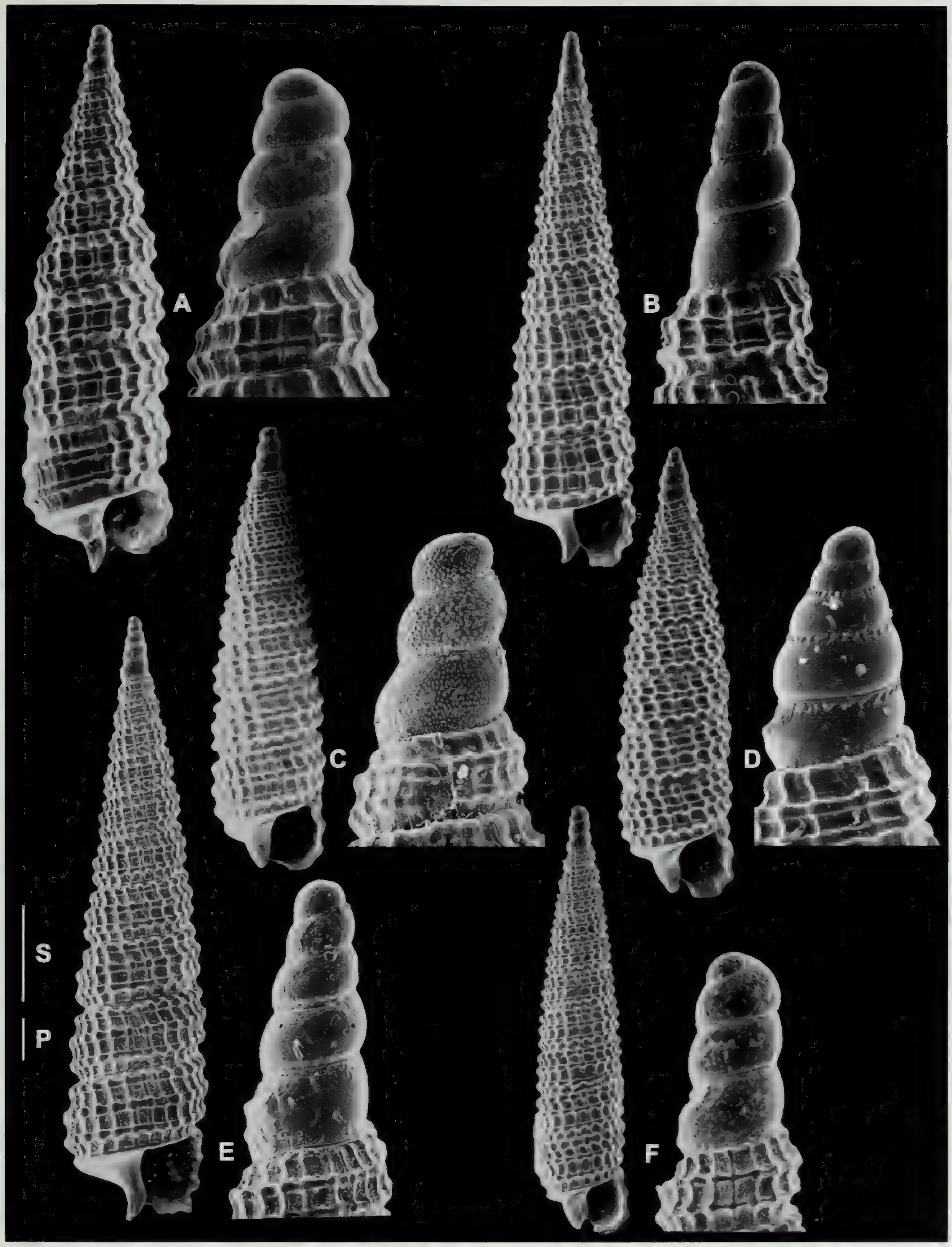

PLATE 1. **Fig. A.** *Cerithiopsis eutrapela* Melvill & Standen, 1896; Off Saint Gilles les Bains,10-20 m; height 6.5; MNHN. **Fig. B.** *C. fosterae* Melvill & Standen, 1896 ; Off Saint Gilles les Bains, 30-55m; height 6.1 mm; MNHN. **Fig. C.** *C. boucheti* n.sp. Off Saint Gilles les Bains, 10-20 m; holotype, height 4.5 mm; MNHN. **Fig .D.** *C. hadfieldi* n.sp. Off Saint Gilles les Bains, 45 m; holotype, height 5.6mm; MNHN. **Fig. E.** *C. iochrous* n.sp. Off Saint Gilles les Bains, 10-20 m; holotype, height 5.5 mm; MNHN. **Fig. F.** *C. jousseaumei* n.sp. Off Saint Gilles les Bains, 10-30 m; holotype, 2,6 mm; MNHN.
Scale bars: S (shells): 1 mm; P (protoconchs): 100 µm.

Remarks. The protoconch of this species resembles in its size and its shape, *Joculator granata* Kay, 1979 and *Cerithiopsis vaurisi* n.sp., but it does not bear the small sutural axial riblets visible on those 2 species. Furthermore, our new species differs from *Joculator granata* by its more slender shape not constricted at base and differs from *Cerithiopsis vaurisi* which has the same shape, by its obviously paler colour.

Cerithiopsis nutzeli n.sp.

Plate 2, B; colour plate I, Fig. 8

Material examined. 2 spmns MNHN, 24 spmns coll. M. Jay, all with complete protoconch.

Description. Shell high, fusiform, topped by the wide and cylindrical protoconch. Protoconch of 2.5 convex whorls, with a large rounded apex, appearing smooth but finely punctate under microscope, and under SEM, mamillated with small hemispherical close-set tubercles; limit from teleoconch along an oblique line marked by change of colour, but adult sculpture begins 1/4 whorl earlier by the progressive development of 2 beaded spiral carinas, continuing the 2 lower cords of teleoconch. Teleoconch of 6 whorls, 3 beaded spiral cords per whorl, subequal on last whorl, but upper cord weaker and retracted on earlier whorls. Weaker axial ribs crossing the cords at right angles, with a rather small bead at each intersection; beads numbering 24 on last whorl. Intervals occupied by very fine axial striae visible only under microscope. A fourth spiral cord emerging from suture at base of last whorl, as strong as other ones, but unbeaded. Base smooth. Aperture rounded. Colour plain orange-brown, protoconch white.
Size : holotype total height 3.4 mm, maximum width 1 mm; height of protoconch 0.46 mm; width of protoconch at base 0.29 mm.

Type locality. Saint-Gilles-les-Bains, between Hermitage and Saint-Paul Bay, found dead in hand-dredged sand at 15-30 m.

Type material. Holotype and paratype 1 in MNHN, paratypes 2 to 12 coll. M. Jay.

Etymology. Dedicated to Alexander Nutzel (Berlin) for his work on the family.

Remarks. This species differs from other allied *Cerithiopsis* of Reunion, in its smaller size and its 2.5 whorled protoconch. It differs from *Joculator* species of the same colour, in its larger size and unconstricted base.

Cerithiopsis pickeringae n. sp.

Plate 2, C; colour plate I, Fig. 9

Material examined. 2 spmns MNHN, 28 spmns coll. M. Jay, all with complete protoconch.

Description. Shell conical, high, slightly fusiform, protoconch extending the general outline of teleoconch. Protoconch of 4 convex whorls, regularly tapering towards the rounded apex, whorls smooth with fine granulations appearing under microscope and SEM, and very fine axial riblets in suture, hardly visible under SEM; limit from teleoconch oblique and clear cut, with change of colour and beginning of teleoconch sculpture. Teleoconch of 8 whorls, 3 beaded spiral cords per whorl, equal on last whorl, but the upper one weaker and retracted on earlier whorls. Weaker axial ribs in their intervals, crossing them at right angles, with a rounded bead at each intersection, beads numbering 26-27 on last whorl. A fourth spiral cord emerging from suture at base of last whorl, weaker than other ones, retracted and unbeaded. Beads becoming smaller at the end of last whorl. Base excavated, smooth. Aperture rounded. Colour dark golden brown, protoconch white.
Size: holotype total height 3.9 mm, maximum width 1.1 mm; height of protoconch 0.48 mm; width of protoconch at base 0.27 mm.

Type locality. Saint-Gilles-les-Bains, found dead in hand-dredged sand at 20-30 m.

Type material. Holotype and paratype 1 in MNHN, paratypes 2 to 10 coll. M. Jay.

Etymology. Dedicated to Mrs Joan Pickering, curator of Mollusca section in the BM.

Remarks. This species resembles *Cerithiopsis boucheti* n.sp. but differs from it in its smaller size, and its more conical protoconch of 4 whorls instead of 3. Other characters have been discussed under *C. boucheti.*

Cerithiopsis seddonae n.sp.

Plate 2, F; colour I, Fig. 10

Material examined. 2 spmns MNHN, 20 spmns coll. M. Jay, all with complete protoconch.

Description. Shell fusiform, rather elongate, base not constricted. Protoconch prominent, rather wide, with rounded apex, consisting in 3.5 convex whorls, appearing smooth to the naked eye, finely granulose under optical microscope, and mamillated with rounded close-set tubercles under SEM; lower limit oblique and clear-cut, marked by change of colour, while on last whorl 2 cords progressively develop, beginning the sculpture of teleoconch. Teleoconch of 5 slightly convex whorls, with 3 spiral cords per whorl, crossed by finer axial ribs, with a rounded bead at each intersection; beads numbering 20 to 22 on penultimate whorl; beads of the upper cord a little weaker than others and constricted, including last whorl. Beads always small, widely spaced, the reticulated sculpture being more obvious than for other species. A fourth

spiral cord emerging from suture at base of last whorl, smooth, and underlining angle with base. A further smooth cord at mid-height on base. Aperture circular. Colour pale brown, protoconch paler or whitish.
Size: holotype total height 2.2 mm; width at base 0.8 mm; height of protoconch 0.60 mm; width of protoconch at base 0.29 mm.

Type locality. Found dead in hand-dredged sand at 10-20 m, off Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN; paratypes 2 to 6 coll. M. Jay.

Etymology. Dedicated to Dr. Mary Seddon, curator of Mollusca section in NMW.

Remarks. This species differs from *Cerithiopsis boucheti* n.sp. in its smaller size (2.2 mm instead of 4.5 mm), and its wider protoconch (3.5 whorls instead of 3). It differs from *Cerithiopsis pickeringae* n. sp. in its smaller size (2.2 mm instead of 3.9 mm) and wider protoconch. From *Cerithiopis nutzeli* n. sp. it differs in its higher protoconch (3.5 whorls instead of 2.5); and from *Joculator* species of the same colour, it differs in not having a constricted base.

Cerithiopsis vaurisi n.sp.

Plate 2, E; colour plate 1, Fig. 11

Material examined. 2 spmns MNHN, 38 spmns coll. M. Jay, 37 with complete protoconch.

Description. Shell conical, slender and high with straight sides, protoconch more shortly conical than general outline of teleoconch, giving its apex a characteristic appearance. Protoconch strongly conical of 5 whorls, last whorl as wide as first whorl of teleoconch, their limit nearly axial marked by development of adult sculpture; earlier whorls tapering swiftly and regularly to the rounded and narrow apex; whorls with flat sides, smooth, with a very narrow spiral row of fine axial riblets in suture and immediately under it, visible under optical microscope and SEM; these riblets somewhat stronger than on other species with the same type of protoconch, and numbering about 24 on last whorl. Teleoconch up to 8 whorls with flat sides, wide and deeply impressed suture; 3 spiral cords per whorl, crossed at right angles by slightly weaker axial ribs, with a rounded bead at each intersection, more or less large; beads more widely spaced axially than spirally, numbering 25-26 on last whorl. A weaker unbeaded spiral cord emerging from suture at base of last whorl. Base excavated. Colour dark brown, protoconch paler at apex but becoming darker on later whorls.
Size: holotype total height 3.6 mm; width at base 0.8 mm; height of protoconch 0.50 mm; width at the base of protoconch 0.34 mm.

Type locality. Found dead in hand-dredged sand at 50-55m, Possession-Bay.

Type material. Holotype and paratype 1 in MNHN, paratypes 2 to 8 coll. M. Jay.

Etymology. Dedicated to Daniel Vauris, skin diver who collected sand for this study.

Remarks. This species has a protoconch of the same type as *Joculator granata* Kay, 1979, but differs from it in its base unconstricted, and in its more numerous whorls. It is quite near *Cerithiopsis lamyi* n.sp. in outline and shape of the protoconch, but differs from it in the small axial riblets in the protoconch suture (lacking in the *C. lamyi*), and in its darker colour. One other *Joculator* species has a protoconch with ribbed suture (*Joculator myia* n.sp.), but this is easily separated by its constricted base, size and colour.

Cerithiopsis wayae n. sp.

Plate 2, D; colour plate I, Fig. 12

Material examined. 1 spmn MNHN, 2 spmns coll. M. Jay, all with complete protoconch.

Description. Shell with a high spire, slightly fusiform, base not constricted. Protoconch prolonging the outline of teleoconch, made of 3 rather wide convex whorls, smooth under the naked eye, but granulose under optical enlargement, and mamillated by rounded tubercles under SEM; apex widely rounded; lower limit clear-cut oblique marked by change of colour, but 2 spiral cords progressively develop on last 1/4 whorl, beginning adult sculpture. Teleoconch of 7 slightly convex whorls, suture weakly impressed, 3 spiral cords per whorl, rather strong, regularly swelling into small and spirally elongate beads, numbering 26-27 per whorl. Fine axial riblets joining the beads, hardly visible even under microscope. The whole surface covered with very fine lamellose axial threads. A fourth unbeaded spiral cord, emerging from suture at base of last whorl. Base excavated, a weak smooth cord at mid-height. Colour blackish brown, protoconch white.
Size: holotype height 4.1 mm; maximum width 1 mm; height of protoconh 0.51 mm; width of protoconch at base 0.38 mm.

Type locality. Off Souris-Chaude, Trois-Bassins, found dead in hand-dredged sand at 30 m.

Type material. Holotype in MNHN, paratypes 1 and 2 coll. M. Jay.

Etymology. Dedicated to Ms Kathie Way, BM, London.

Remarks. This species differs from other *Cerithiopsis* species in its spirally elongate beads, and well

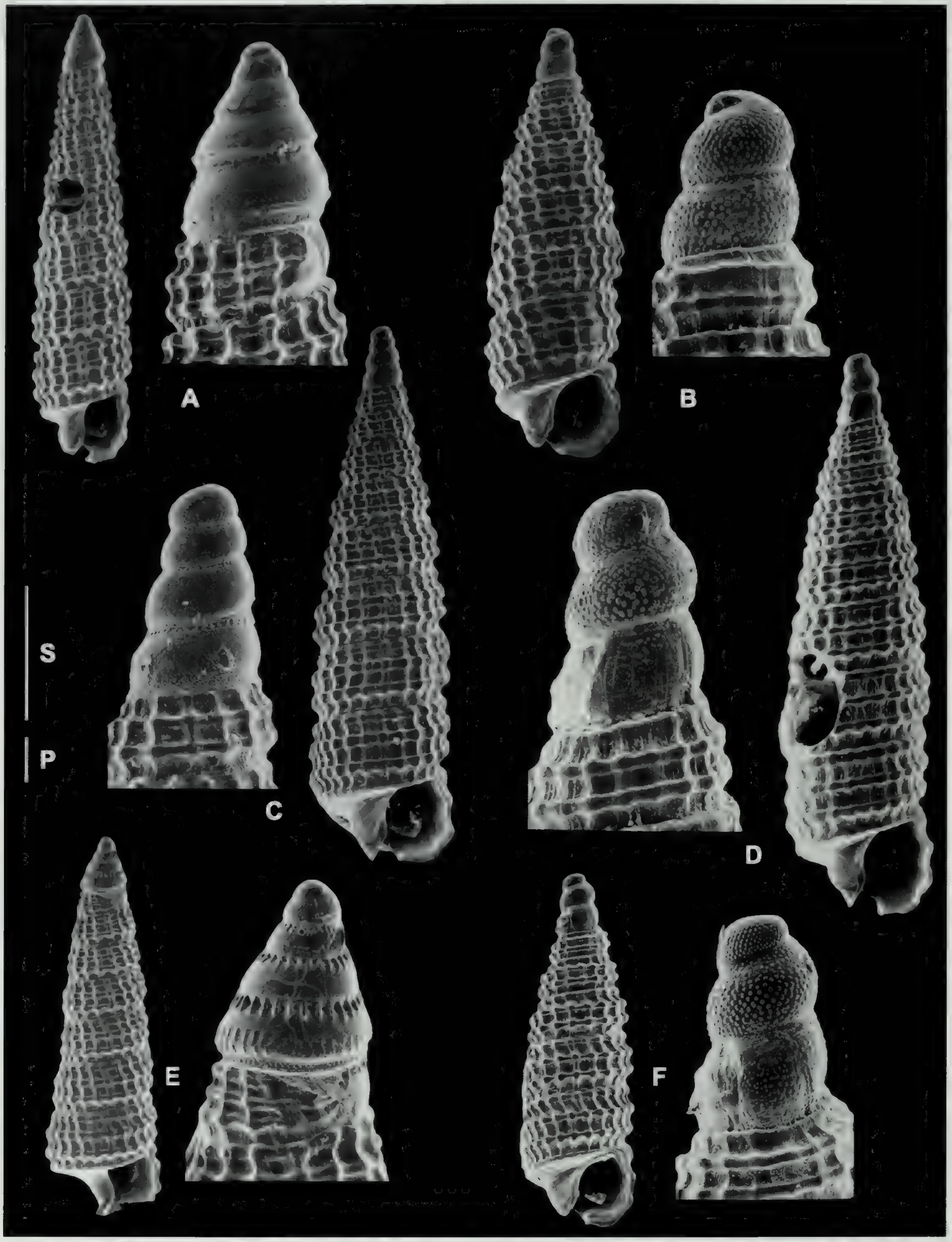

PLATE 2. Fig. A. *Cerithiopsis lamyi* n.sp. Off Souris-Chaude, Trois-Bassins, 30 m; holotype, height 1.5 mm; MNHN. **Fig. B.** *C. nutzeli* n.sp. Off Saint Gilles les Bains, 15-30 m; holotype, height 3.4 mm; coll. M.Jay. **Fig. C .** *C. pickeringae* n.sp. Off Saint Gilles les Bains, 20-30 m; holotype, height 3.9 mm; MNHN. **Fig. D.** *C. wayae* n.sp. Off Souris-Chaude, Trois-Bassins, 30 m; holotype, height 4.1 mm; MNHN. **Fig. E.** *C. vaurisi* n.sp. Possession Bay, 55m; holotype, height 3.6 mm; MNHN. **Fig. F.** *Cerithopsis seddonae* n.sp. Off Saint Gilles les Bains, 10-20 m; holotype, height 2.2 mm; MNHN.
Scale bars: S (shells): 1 mm; P (protoconchs): 100 μm.

developed lamellose axial threads. The sculpture resembles that of *Belonimorphis belonimorphis* n.sp., but the present species differs in its protoconch and its earlier whorls.

Genus ***Joculator*** Hedley, 1909
Type species *Cerithiopsis ridicula* Watson,1886, Queensland: Shell constricted at base; teleoconch whorls with 3 beaded cords; protoconch smooth or punctate, without ribs or cords.

Joculator albocinctum **(Melvill & Standen, 1896)**

Plate 4, A; colour plate I, Fig. 13

Material examined. 1 spmn MNHN; 30 spmns (13 with complete protoconch) coll. M. Jay; 11 spmns coll. J. Drivas.

Description. Shell fusiform, constricted at base, topped by protoconch. Angle at the summit of teleoconch 40°. Protoconch nearly cylindrical, made of 4 convex whorls, smooth to the naked eye, under SEM with fine granulations on first whorl and fine axial riblets in suture, numbering about 20 on last whorl; apex rounded, limit from teleoconch oblique, marked by change of colour, adult sculpture developing progressively on last whorl. Teleoconch with 3 beaded spiral cords per whorl, and weaker axial ribs, with a bead at each intersection, 19 to 20 beads per whorl; beads of upper cord a little stronger and more rounded than on lower cords. A fourth spiral cord, undulose rather than beaded, emerging from suture at base of last whorl. A fifth smooth cord on base. Aperture oval. The upper beaded cord creamy-white, the remainder of whorls pale brown, the 2 lowest cords appearing as brown lines, darker than the beads. Protoconch white.
Size: maximum height 3 mm; maximum width 1 mm; height of protoconch 0.57 mm; width of protoconch at base 0.33 mm.

Locality. Found dead in hand-dredged sand at 10-20 m, off Saint-Gilles-les-Bains.

Remarks. The teleoconch of our specimens have the same sculpture and same colour pattern as the holotype of *Bittium albocinctum* Melvill & Standen, 1896, (type locality Loyalty Isl.) (MM lot EE 3702); but this type has no trace of the protoconch left, and is larger (4.3 mm without protoconch instead of 2.4 mm for the teleoconch of our larger specimen). On account of the characteristic pattern of the teleoconch, and in spite of the difference in sizes, we propose this identification, specimens from Reunion being considered as a dwarf variety.

Joculator granata **Kay, 1979.**

Plate 4, D; colour plate I, Fig. 14

Material examined. 1 spmn MNHN ; 15 spmns (9 with complete protoconch) coll. M. Jay;

Description. Shell fusiform, nearly cylindrical in the middle, and slightly constricted at base. Protoconch conical of 5 slightly convex whorls, smooth except for a very narrow spiral row of very fine, short axial riblets inside suture, projecting over the very uppermost part of whorls, visible under optical microscope and SEM, 22 riblets on last whorl; last whorl as wide as the earlier whorl of teleoconch, the limit between them obliquely marked by the development of adult sculpture; earlier whorls tapering swiftly to the narrow rounded apex. Teleoconch of 6 whorls, with 3 spiral cords per whorl, crossed at right angles by weaker axial ribs, with a rounded bead at each intersection; beads numbering 24 or 25 on last whorl; the upper beaded cord a little weaker than the other ones. A fourth beaded spiral cord emerging from suture at base of last whorl. Aperture circular. Rare specimens with one more whorl, wider and distorted, but always constricted at base. Plain pale brown in colour, protoconch paler.
Size: total height ranging from 2.3 mm to 2.9 mm; maximum width from 0.7 to 0.9 mm; height of protoconch 0.41 mm; width of protoconch at last whorl 0.31 mm.

Locality. Found dead in hand-dredged sand at 10-20 m off Saint-Gilles-les-Bains.

Remarks. Our specimens match the description and figure given by A. Kay, 1979 (*Joculator granata*, type locality Hawaii) specifically the suture of the protoconch, which A.Kay described as “crimped”, this character given as distinctive from the related species. 3 species of *Joculator* among our material have such protoconchs: *Joculator myia* n.sp. differs from *J. granata* in its smaller size and in its 4.5 teleoconch whorls instead of 6; *Joculator skolix* n.sp. differs from it in its protoconch shape, size, and colour; *Joculator albocinctum* (Melvill & Standen, 1896) differs in the particular colour pattern of the teleoconch. *Cerithiopsis* species with such protoconchs (*Cerithiopsis vaurisi* n.sp., *Cerithiopsis pickeringae* n.sp., *Cerithiopsis hadfieldi* n.sp.) differ from it in having a higher teleoconch, not constricted at the base.

Joculator minima **Laseron, 1955.**

Plate 3, B; colour plate I, Fig. 15

Material examined. 1 spmn MNHN; 12 spmns (6 with complete protoconch) coll. M. Jay; 3 spmns coll. J. Drivas.

Description. Shell pupiform with constricted base and summit topped by a high conical pointed protoconch. Protoconch of 5.5 slightly convex smooth whorls, under SEM with a very fine spiral thread just above suture; last whorl rather large, equal to first whorl of teleoconch. Teleoconch of 5 whorls, with 3 spiral cords per whorl, crossed at right angles by axial ribs a little weaker than the cords, with a rounded bead at each intersection; beads numbering 19-20 on last whorl. Beads of upper cord somewhat larger than those of lower cords. A fourth beaded cord emerging from suture at base of last whorl; base smooth and concave, with 3 spiral threads on anterior canal. Aperture circular. Colour pale brown to cream, protoconch of the same colour. A few specimens with one more distorted whorl, wider but constricted at base.
Size: maximum height 2.3 mm, maximum width 1 mm; height of protoconch 0.45 mm; width of protoconch at base 0.30 mm.

Locality. Found dead in hand dredged sand at 10-20m, off Saint-Gilles-les-Bains.

Remarks. Our specimens match exactly the description and figure given by Laseron (*Joculator minima* Laseron, 1955, type locality Hope Isl .). This species is distinguished by the width of the protoconch, especially its last whorl, occasionally wider on our specimens than in Laseron's figure.

Joculator minutissima (Thiele, 1925).

Plate 3, C; colour plate I, Fig. 16

Material examined. 1 spmn MNHN; 26 spmns (4 with complete protoconch) coll. M. Jay; 3 spmns coll. J. Drivas.

Description. Shell pupiform and very short, wide compared to its height, its summit topped by a prominent cylindrical but short protoconch. Protoconch of 2.25 smooth whorls, the first one rounded, the second one weakly convex. Teleoconch of 3 whorls, with 3 subequal spiral cords, crossed at right angles by weaker axial ribs, with a rounded bead at each intersection; beads numbering 18 on penultimate whorl. Colour plain brown, protoconch paler.
Size: maximum height 1.5 mm; maximum width 0.6 mm; height of protoconch 0.25 mm; width of protoconch at base 0.21 mm.

Locality. Found dead in hand-dredged sand at 10-54 m, off Saint-Gilles-les-Bains and Possession-Bay.

Remarks. Our specimens were compared with the holotype of *Cerithiopsis minutissima* Thiele, 1925, type locality Nias Isl. in MNK (Lot Nr 102724) and found identical.

Joculator pulvis (Issel, 1869)

Plate 3, F; colour plate I, Fig. 17

Material examined. 1 spmn MNHN, 7 spmns (2 with complete protoconch) coll. M. Jay. 7 spmns coll. J. Drivas.

Description. Shell pupiform, tapering towards apex, with base strongly constricted. Protoconch prominent, almost cylindrical, made of 3.5 convex smooth whorls with rounded apex, and under microscope a spiral row of fine granules just above lower suture. Teleoconch of 6 whorls, with 3 subequal spiral cords, and distinct axial ribs, equal to the cords, crossing them at right angles, with a small rounded bead at each intersection; beads widely spaced, numbering 16 or 17 on penultimate whorl. A fourth spiral cord emerging from suture, weaker and finely beaded, at base of last whorl. Base with a fifth smooth cord. The upper cord and its beads reddish brown, ground and the 2 other cords very pale brown. Protoconch white.
Size: maximum height 2.9 mm; maximum width 1.2 mm; height of protoconch 0.46 mm; width of protoconch at base 0.35 mm. Some variability in size exists between specimens.

Locality. Found dead in hand-dredged sand at 10-20 m off Saint-Gilles-les-Bains.

Remarks. Our specimens were compared and found identical to the specimen stored in the MNHN typothèque, and labelled *Cerithium* (*Cerithiopsis*?) *pulvis*, type locality Suez roadstead. Specimens match Savigny's figure (Bouchet & Danrigal, 1982). This species resembles *Joculator eudeli* n.sp. which has the same colour pattern, but differs in its greater width, its base bearing one smooth spiral cord instead of 2, the colour of the upper cord being more reddish and less blackish, and the fact that this colour does not reach the suture. The species may be compared with *Cerithiopsis insignis* E.A.Smith, 1906, from Port Shepstone, South Africa, but differs from it in having 6 teleoconch whorls instead of 8, its 3.5 whorled protoconch instead of 4.5, and in its size (2.9 x 1.2 instead of 3.25 mm x 1mm) (see discussion below with *Dizoniopsis herberti* n.sp.). The other pupiform species with a similar colour pattern have only 2 spiral beaded cords, except on last whorl; *Horologica bicolor* Laseron, 1956 and *Horologica semipicta* Gould, 1861, are smaller; *Dizoniopsis herberti* n.sp. with its 2 spiral cords per whorl, and a third cord on the last whorl, is easily separated by its axially costate protoconch.

Joculator christiaensi n.sp.

Plate 3, E; colour plate I, Fig. 18

Material examined. 1 spmn MNHN; 18 spmns (1 with complete protoconch) coll. M. Jay; 2 spmns coll. J. Drivas.

Description. Shell pupiform, strongly swollen at middle, strongly constricted at base, and topped by a stick-shaped protoconch. Protoconch cylindrical and narrow, of 3 slightly convex smooth whorls, with a rounded apex, limited from teleoconch by an oblique line marking change of colour, and appearance of adult sculpture. Teleoconch of 4 whorls, flat-sided, with 3 spiral cords per whorl, and finer axial ribs crossing them at right angles; one rounded bead at each intersection, beads numbering 16 per whorl. On the 2 middle whorls, beads of the upper row are stronger. A fourth weaker cord, finely beaded, emerging from suture at base of last whorl. On last whorl, beads becoming smaller towards the outer lip of aperture. A fifth smooth cord on base. Aperture small, roundly quadrate. Colour dark brown, the upper cord and its beads, and the whole first whorl and protoconch whitish.
Size: holotype total height 1.7 mm; maximum width 0.6 mm height of protoconch 0.34 mm; width of protoconch at base 0.24 mm. Paratype height 1.9 mm; maximum width 1 mm.

Type locality. Found dead in hand-dredged sand at 55 m, Saint-Gilles-les-Bains, between harbour and Boucan-Canot beach.

Type material. Holotype in MNHN, paratype 1 coll. M. Jay.

Etymology. Dedicated to J. Christiaens (Belgium).

Remarks. This species is characterized by its swollen shape, with its prominent narrow protoconch, which resembles that of *Joculator minutissima* (Thiele, 1925) from which it differs in its larger size, stronger beads, and distinct colour pattern. The nearest species is *Joculator ovata* Laseron, 1956, from NE Australia (Hope Isl.), the illustrated type of which has a broken protoconch with only 1.5 whorls left, but has a colour pattern and general outline, including the last whorl of protoconch, similar to the present species. However, *J. christiensi* n.sp. differs from it in having a teleoconch of 4 whorls on all specimens instead of 5, and 16 beads per whorl instead of 14. *Joculator albordina* Laseron, 1956, (type locality Michaelmas Cay, NE Autralia), which has a comparable colour pattern is larger in size, with teleoconch of 6 whorls instead of 4 in mature specimens, and 20 beads per whorl instead of 16.

Joculator eudeli n.sp.

Plate 3, D; colour plate I, Fig. 19

Material examined. 2 spmns MNHN; 41 spmns (3 with complete protoconch) coll. M. Jay.

Description. Shell very small, pupiform, with a nearly cylindrical protoconch, base strongly constricted. Protoconch of 3.5 whorls, slightly convex and smooth, with a fine granulation under optical microscope, distinct under SEM on the lower half of first whorl; limit from teleoconch oblique, marked by change of colour, adult sculpture arising progressively one half whorl earlier. Teleoconch of 5 whorls, suture wide and deeply impressed. 3 spiral cords per whorl, subequal, crossed at right angles by equal axial ribs, with a strong rounded bead at each intersection; beads close-set, numbering 20-21 per whorl. A fourth beaded spiral cord, equal to the other ones, emerging from suture at base of last whorl. 2 more spiral cords on base, weaker and smooth, followed by 2 fine threads on anterior part. Aperture quadrangular. Colour beige or fawn on fresh specimens, suture and upper cord blackish-brown with reddish gleam; fourth cord on last whorl and base blackish-brown.
Size: holotype height 1.9 mm; maximum width 0.8 mm; height of protoconch 0.40 mm; widh of protoconch at base 0.27 mm.

Type locality. Found dead in hand-dredged sand at 30 m, off Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN, paratypes 2 to 6 coll. M. Jay.

Etymology. Dedicated to Emile Eudel, merchant ship captain in the last century, who was one of the earlier collectors of Reunion fauna.

Remarks. This species resembles *Joculator pulvis* (Issel, 1869), but differs in its smaller size, the 2 smooth spiral cords on base instead of 1, the blackish-brown colour of the upper cord instead of reddish-brown, and in its suture being tinted by this same colour. It differs from *Cerithiopsis (Joculator) insignis* E.A.Smith, 1906, as discussed above with *Joculator pulvis*. Other pupiform species with similar colour pattern (*Horologica bicolor* Laseron, 1956, *Horologica semipicta* Gould, 1861, and *Dizoniopsis herberti* n.sp.) have only 2 spiral beaded cords per whorl, a third cord only on last whorl; *Dizoniopsis herberti* n.sp. is easily distinguished by its axially ribbed protoconch.

Joculator fischeri n.sp.

Plate 3, A; colour plate I, Fig. 20

Material examined 2 spmns MNHN; 8 spmns (4 with complete protoconch) coll. M. Jay.

Description. Shell fusiform, with a nearly cylindrical protoconch, base constricted. Protoconch of 3.5 smooth convex whorls, with rounded apex, its limit from teleoconch oblique marked by change of colour and appearance of adult sculpture. Teleoconch of 7 whorls, 3 beaded spiral cords per whorl; axial ribs distinct, equal to cords, crossing them at right angles, with a rounded bead at each intersection; beads rather

small, appearing widely spaced, and numbering 19-20 on last whorl: the middle cord reduced to a fine thread on first whorl, obviously weaker than the other ones on following whorls, and still a little weaker on last whorl, the upper cord a little stronger than the lower one. A fourth beaded spiral cord, weaker, emerging from suture at base of last whorl. Base excavated with a weak smooth cord at mid-height. Aperture circular. Colour glossy brown, the upper cord a little darker, protoconch paler.
Size: holotype total height 2.3 mm, maximum width 0.8 mm; height of protoconch 0.35 mm; width of protoconch 0.23 mm.

Type locality. Found dead in hand-dredged sand at 30 m off Souris-Chaude, Trois-Bassins.

Type material. Holotype and paratype 1 in MNHN, paratypes 2 to 5 coll. M. Jay.

Etymology. Dedicated to Pr.P.H. Fischer, late professor in zoology at Saigon.

Remarks. This species is smaller than *Joculator keratochroma* n.sp. and *Joculator lozoueti* n.sp. It differs from other species of brown *Joculator* of the same size, namely *J. myia* n.sp., *J. mygaki* n.sp., *J. phtyr* n.sp., *J. psyllos* n.sp. and *J. thielei* n.sp. in its weaker middle cord and stronger upper cord.

Joculator keratochroma n.sp.

Plate 3, G; colour plate I, Fig. 21

Material examined. 2 spmns MNHN; 27 spmns (1 with complete protoconch) coll. M. Jay; 9 spmns (1 with complete protoconch) coll. J. Drivas.

Description. Shell pupiform with strongly constricted base and prominent protoconch. Protoconch high, slightly conical with wide and rounded apex, and 4 convex smooth whorls; the last whorl a little narrower in diameter than the first whorl of teleoconch; its limit from teleoconch oblique, marked by change of sculpture. Teleoconch of 7 slightly convex whorls, suture shallow, penultimate and last whorl constricted. 3 spiral cords per whorl, subequal, crossed at right angles by rounded axial ribs, weaker than cords. A rounded bead at each intersection, beads numbering 17 or 18 per whorl. A fourth beaded spiral cord emerging from suture at base of last whorl. Last whorl strongly constricted with 4 spiral cords, their beads becoming much weaker towards aperture. 2 more cords, fine and smooth, on base. Aperture circular. Colour plain horny-brown, or dark cream, identical on all specimens.
Size: holotype total height 2.5 mm; maximum width 1 mm; height of protoconch 0.30 mm; maximum width of protoconch 0.26 mm.

Type locality. Found dead in hand-dredged sand at 10-20 m, off Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN; paratype 2 and 3 coll. M. Jay; paratype 4 coll. J. Drivas.

Etymology. Named after its colour, from Greek kera, meaning horn.

Remarks. This species differs from *Joculator melanoraphis* n.sp. which has a comparable shape, in its plain coloration and its slightly higher protoconch (4 whorls instead of 3.5); it differs from *J. ridicula* (Watson,1886) in its larger size (2.5 mm instead of 1.4 mm) and in having 7 teleoconch whorls instead of 3; it differs from *J. tribulationis* (Hedley, 1909) in its slightly larger size (2.5 mm instead of 2.1 mm), its 4 protoconch whorls instead of 3 and in its 6 teleoconch whorls instead of 5; *J. minima* Laseron, 1955, *J. minutissima*, (Thiele, 1925), *J. thielei* n.sp. are much smaller and have different protoconchs. *Cerithiopsis (Joculator) pupula* Dunker (MNK lot Nr 6824) is more ventricose.

Joculator laseroni n.sp.

Plate 5, A; colour plate I, Fig. 22

Material examined. 2 spmns MNHN; 18 spmns (3 with complete protoconch) coll. M. Jay.

Description. Shell small, fusiform with constricted base. Protoconch rather cylindrical with rounded apex, comprising 3 convex smooth whorls, its limit from teleoconch very oblique, marked by change of colour and sculpture. Teleoconch of 5 whorls, suture poorly visible, 3 spiral cords per whorl, crossed at right angles by slightly weaker axial ribs, with a large rounded bead at each intersection; spiral cords subequal, beads numbering 16 per whorl, and appearing close-set. A fourth beaded spiral cord emerging from suture at base of last whorl. A fifth weak and unbeaded cord on base. Aperture circular. Colour deep brown, the beads a little paler than ground; protoconch white.
Size: holotype total height 2.3 mm, maximum width 0.9 mm; height of protoconch 0.26 mm; width of protoconch at base 0.22 mm.

Type locality. Found dead in hand-dredged sand at 30 m, off Boucan-Canot beach, Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN; paratypes 2 to 4 coll. M. Jay.

Etymology. Dedicated to C.F. Laseron, on account of its resemblance to *Joculator subula* described by him.

Remarks. This species matches the description of *Joculator subula* Laseron 1956, (Bowen, Queensland) except for its 3 protoconch whorls instead of 5.5

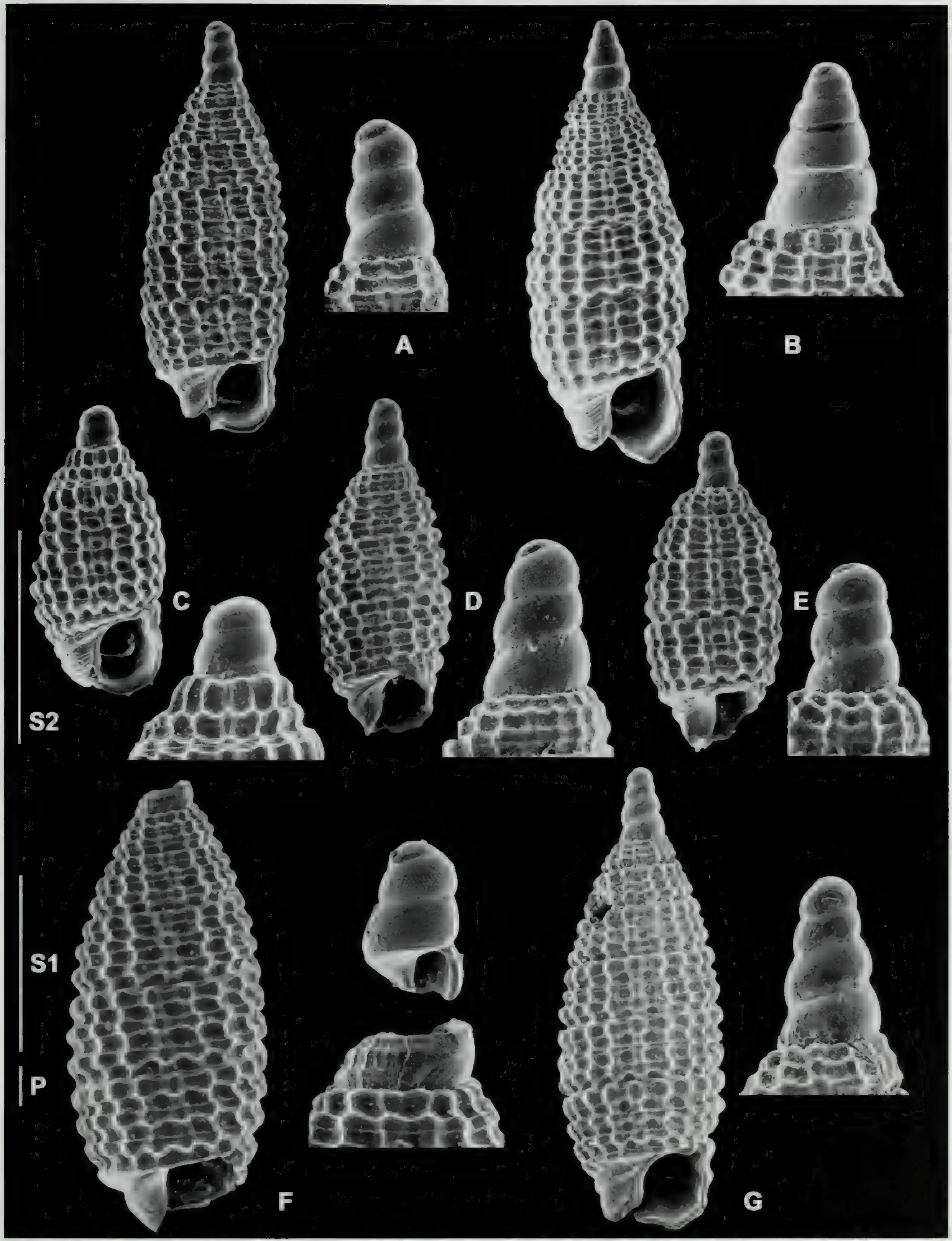

PLATE 3. Fig. A. *Joculator fischeri* n.sp. Off Souris-Chaude, Trois-Bassins, 30 m; holotype, height 2.3 mm; MNHN. **Fig. B.** *J. minima* Laseron, 1955. Off Saint Gilles les Bains, 10-20 m; height 2.3 mm; MNHN. **Fig. C.** *J. minutissima* (Thiele, 1925). Off Saint Gilles les Bains and Possession Bay 10-54 m; height 1.5 mm; MNHN. **Fig. D.** *J. eudeli* n.sp. Off Saint Gilles les Bains, 30 m; holotype, height 1.9 mm; MNHN. **Fig. E.** *J. christiaensi* n.sp. Off Saint Gilles les Bains, 55 m; holotype, height 1.7 mm; MNHN. **Fig. F.** *J. pulvis* (Issel, 1869). Off Saint Gilles les Bains, 10-20 m; height 2.9 mm; MNHN. **Fig. G.** *J. keratochroma* n.sp. Off Saint Gilles les Bains, 10-20 m; holotype, height 2.5 mm; MNHN.
Scale bars: S (shells): 1 mm; P (protoconchs): 100 µm.

whorls on *J. subula*. It differs from *Joculator salvati* n.sp., which has the same shape and colour, in its smaller size (2.3 mm against 3.6), in its protoconch (3 whorls against 2.25) and its plain colour.

***Joculator lozoueti* n.sp.**

Plate 4, B; colour plate I, Fig. 23

Material examined. 2 spmns MNHN; 53 spmns (2 with complete protoconch) coll. M. Jay; 10 spmns coll. J. Drivas.

Description. Shell pupiform with strongly constricted base and prominent protoconch. Protoconch cylindrical, made of 2.5 convex whorls, smooth and translucent, with very rounded apex, its limit from teleoconch very oblique, marked by change of colour and sculpture. Teleoconch of 7 slightly convex whorls with shallow suture. 3 spiral cords per whorl, subequal, crossed at right angles by weak axial ribs. A strong rounded bead at each intersection, beads very close-set and numbering 17 or 18 per whorl. A fourth spiral cord emerging from suture on base of last whorl. On the 4 cords of last whorl, towards aperture, beads becoming weaker and axially elongate, the lowest cord unbeaded. A fifth fine smooth cord on base. Aperture oval. Colour plain dark brown, protoconch white.
Size: holotype total height 3.2 mm; maximum width 1.3 mm; height of protoconch 0.42 mm; maximum width of protoconch 0.34 mm.

Type locality. Found dead in hand-dredged sand at 10-20 m off Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN; paratypes 2 and 3 coll. M. Jay; paratypes 4 and 5 coll. J. Drivas.

Etymology. Dedicated to Mr. Lozouet, MNHN Paris.

Remarks. This species differs from *Joculator keratochroma* n.sp. in its slightly higher size, shorter protoconch (2.5 whorls instad of 4), and darker colour. It differs from *J. melanoraphis* n.sp. in its shorter protoconch (2.5 whorls instead of 3.5), and plain coloration; it differs from *J. subula* Laseron, 1856 in its larger size, less blackish colour, and shorter protoconch (2.5 whorls against 5.5); it differs from *J. continens* Laseron, 1856 (Bowen, Queensland) in the above characters and its slightly shorter and wider protoconch; it differs from *J. melania* Laseron, 1856 (Bowen, Queensland) in its shorter protoconch (2.5 whorls instead of 4.5).

***Joculator megacephala* n. sp.**

Plate 5, B; colour plate I, Fig. 24

Material examined. 2 spmns MNHN; 20 spmns (13 with complete protoconch) coll. M. Jay.

Description. Shell very small and pupiform, strongly constricted at base, with a prominent rather large protoconch. Protoconch conical of 5.5 convex smooth whorls, forming by itself about 1/3 of the total height of the shell, with narrow and rounded apex, its last whorl of large diameter compared with teleoconch, its lower limit along an oblique line marked by change of sculpture and colour; the specimen photographed under SEM shows a worn surface. Teleoconch of 4 whorls with 3 spiral cords per whorl, crossed at right angles by slightly weaker axial ribs, with a rounded bead at each intersection; 20 beads per whorl. A fourth weaker and more finely beaded cord emerging from suture at base of last whorl. Aperture oval. Colour dark cream, protoconch pale brown.
Size: holotype height 1.8 mm., maximum width 0.6 mm; height of protoconch 0.42 mm; width of protoconch at base 0.35 mm.

Type locality. Found dead in hand-dredged sand at 10-20 m, off Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN; paratypes 2 to 14 coll. M. Jay.

Etymology. Named after its shape, from Greek, meaning "large head".

Remarks. This species has the same shape as *Horologica macrocephala* (Laseron, 1956), but differs from it in the 3 spiral cords instead of 2 on the teleoconch whorls, its weaker, more numerous and more close-set beads, and its smaller size. It differs from *Joculator minima* Laseron, 1956 in its smaller size (1.8 mm instead of 2.3mm), its proportionally larger protoconch (0.5 mm for the 2 species), its colour (cream instead of brown), and its subequal beaded cords, the beads of the upper cord being somewhat larger on *J. minima*.

***Joculator melanoraphis* n.sp.**

Plate 5, F; colour plate I, Fig. 25

Material examined. 2 spmns MNHN; 24 spmns (11 with complete protoconch) coll. M. Jay; 5 spmns (2 with complete protoconch) coll. J. Drivas.

Description. Shell pupiform, rather globose, with strongly constricted base and high protoconch. Protoconch of 3.5 smooth convex and translucent whorls, rounded apex, well delimited from teleoconch by an oblique line marking change of sculpture. Teleoconch of 7 whorls with straight sides and shallow suture. 3 spiral cords per whorl, the uppermost one a little weaker on first whorl, but equal to the other ones on following whorls. Rounded and widely-spaced axial ribs, a little smaller than cords, crossing them at right angles, with a rounded bead at each intersection, beads close-set and numbering 16 or 17 per whorl. On fresh specimens, very fine axial riblets visible under

microscope on whole surface including cords and ribs, numbering 6 to 7 in each interval. A fourth spiral cord emerging from suture at base of last whorl, with only weak swellings rather than beads; a fifth smooth cord on base of mature specimens. Aperture circular. Colour plain beige to pale brown; suture, base and protoconch darker brown. On fresh specimens, the upper cord is a little darker than the other ones, but remains clearly paler than suture.
Size: holotype total height 2.9 mm, maximum width 1 mm; height of protoconch 0.44 mm; width of protoconch at base 0.30 mm.

Type locality. Found dead in hand-dredged sand at 10-30 m, off Saint-Gilles-les-Bains, between harbour and Boucan-Canot beach.

Type material. Holotype and paratype 1 in MNHN; paratypes 2 to 12 coll. M. Jay; paratypes 13 and 14 coll. J. Drivas.

Etymology. Named on account of its colour pattern from Greek meaning brown suture.

Remarks. *Dizoniopsis herosae* n. sp. which has the same colour and a brown suture, is easily separated from this species by its 2 spiral cords instead of 3, and its axially ribbed protoconch. The other species discussed below lack the darker suture: *Joculator granata* Kay, 1979, is higher and less constricted basally, and its upper cord is weaker on all whorls; it also has a crimped suture on the protoconch whorls. *Joculator keratochroma* n. sp. is of the same shape, but is smaller and has a plain coloration; *Joculator lozoueti* n.sp. can be separated on account of its more ventricose shape, its white protoconch and the plain, darker colour of the teleoconch; *Bittium* (*Joculator*) *tenthrenois* Melvill, 1896 from Bombay, differs in its more ventricose shape and its plain brown colour; *Cerithiopsis* (*Joculator*) *ridicula* Watson, 1866 from Wednesday Isl., NE Australia, differs in having only 3 teleoconch whorls, and its upper cord is weaker on all whorls, and its coloration plain; *Joculator minima* Laseron, 1955, *J. niasensis* (Thiele, 1925), and *J. psyllos* n.sp. are of similar shape, but are much smaller.

Joculator mygaki n. sp.

Plate 5, E; colour plate I, Fig. 26

Material examined. 2 spmns MNHN; 15 spmns (10 with complete protoconch) coll. M. Jay; 5 spmns coll. J. Drivas.

Description. Shell very small and pupiform, its slender apex topped by protoconch, and constricted at base. Protoconch of 5.5 convex smooth whorls, the last one wide and ventricose, its limit from teleoconch marked by beginning of sculpture along an oblique line; the earlier whorls regularly tapering to the rounded but very narrow apex. Teleoconch of 4.5 whorls, with 3 subequal spiral cords per whorl, crossed at right angles by weak axial ribs, with a rounded bead at each intersection; beads close-set, numbering 23-24 per whorl. A fourth beaded spiral cord emerging from suture at base of last whorl, weaker than the other ones. 2 weak and unbeaded spiral cords on base. Aperture rounded. Colour plain orange-brown, vivid when fresh, the 3 last whorls of protoconch brown, the earlier 2 white.
Size: holotype total height 1.9 mm, maximum width 0.6 mm; height of protoconch 0.42 mm; width of protoconch at base 0.30 mm.

Type locality. Found dead in hand-dredged sand at 30m, off Boucan-Canot beach, Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN; paratypes 2 to 10 coll. M. Jay.

Etymology. Named for its size, after Greek meaning midge.

Remarks. This species resembles *Joculator minima* Laseron in its shape, but differs from it in its smaller size (1.9 mm instead of 2.3 mm) and its 3 rows of equal beads. It differs from *Bittium* (*Joculator*) *uveanum* Melvill & Standen, 1896, from Loyalty Isl. in its smaller size (1.9 mm instead of 2.3 mm), its less swollen shape, its finer and more numerous beads, and its colour; it differs from *Joculator myia* n.sp. in its protoconch (brown tinted and more acute) and in its more orange colour.

Joculator myia n. sp.

Plate 4, C; colour plate I, Fig. 27

Material examined. 2 spmns MNHN; 10 spmns (7 with complete protoconch) coll. M. Jay.

Description. Very small pupiform shell, more pointed and narrow towards apex than towards the constricted base. Protoconch of 5 whorls, conical, the 2 last whorls convex and ventricose, the 3 earlier tapering regularly towards the rounded and rather wide apex; a narrow spiral row of fine and very short axial riblets in suture, overlapping on the upper 1/8 of lower whorl; the earlier whorls finely granulose under SEM. Limit from teleoconch very oblique marked by change of colour and appearance of adult sculpture. Teleoconch of 4.5 whorls, with 3 spiral beaded cords per whorl, crossed at right angles by fine axial ribs, with a rounded bead at each intersection; the 3 beaded cords subequal, beads close-set, and numbering 19-20 per whorl. A fourth spiral cord, with smaller beads, emerging from suture at base of last whorl. Aperture circular. Colour pale golden brown, protoconch white. Some specimens with one more wider whorl, but also constricted at base.

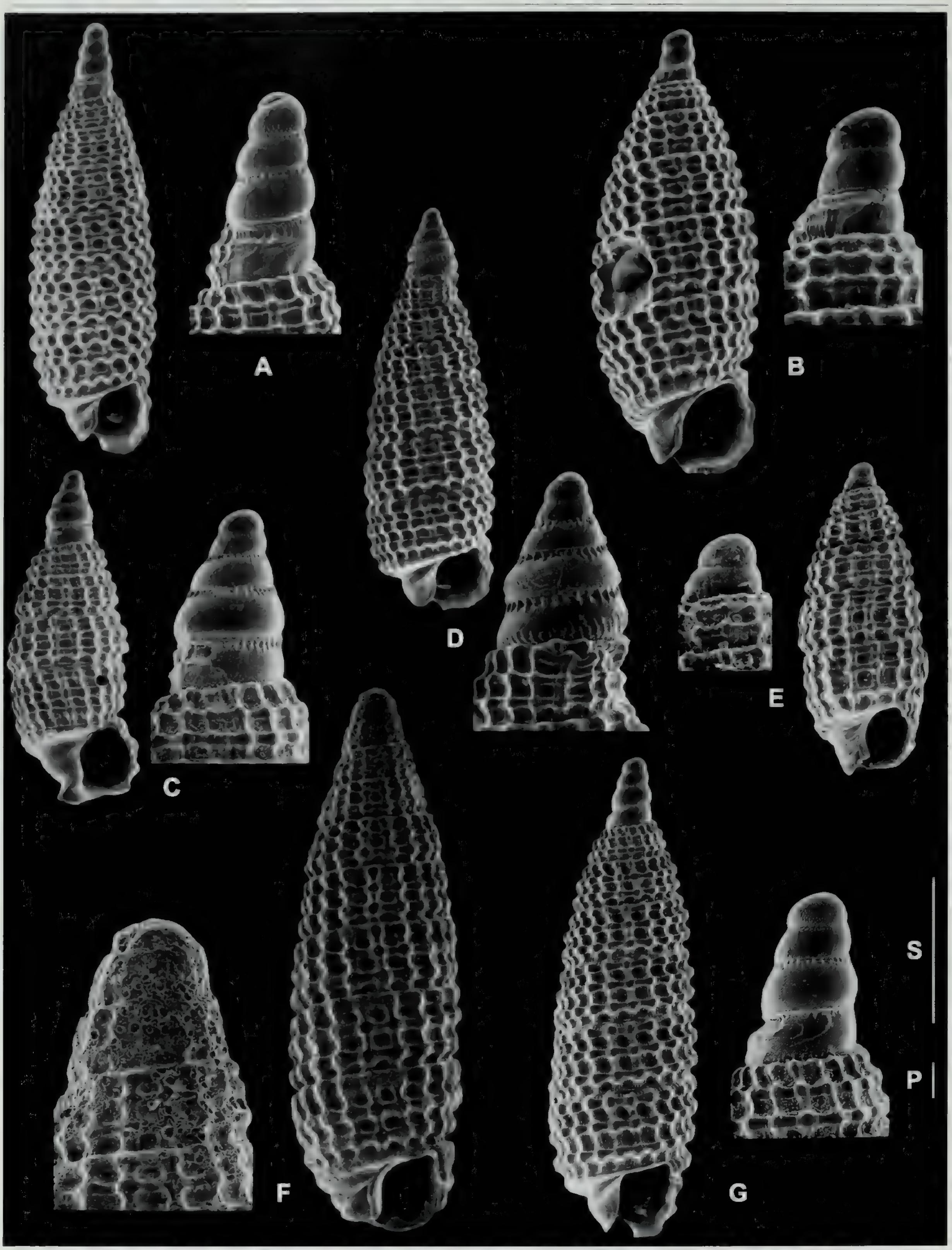

PLATE 4. Fig. A. *Joculator albocinctum* Melvill & Standen, 1896. Off Saint Gilles les Bains, 10-20 m, height 3 mm; MNHN. **Fig. B.** *J. lozoueti* n.sp. Off Saint Gilles les Bains, 10-20 m; holotype, height 3.2 mm; MNHN. **Fig. C.** *J. myia* n.sp. Off Boucan-Canot beach, Saint Gilles les Bains, 30 m; holotype, height 2.2 mm; MNHN. **Fig. D.** *J. granata* Kay, 1979. Off Saint Gilles les Bains, 10-20 m; height 2.5 mm; MNHN. **Fig. E.** *J. psyllos* n.sp. Off Saint Gilles les Bains, 10-20 m; holotype, height 2 mm; MNHN. **Fig. F.** *J. salvati* n.sp. Off Boucan-Canot beach, Saint Gilles les Bains, 35 m; holotype, height 3.6 mm; MNHN. **Fig. G.** *J. skolix* n.sp. Off Boucan-Canot beach, Saint Gilles les Bains, 35 m; holotype, height 3.2 mm; MNHN.
Scale bars: S (shells): 1 mm; P (protoconchs): 100 µm.

Size: holotype total height 2.2 mm; maximum width 0.6 mm; height of protoconch 0.46 mm; width of protoconch at base 0.34 mm.

Type locality. Found dead in hand-dredged sand at 30 m, off Boucan-Canot beach, Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN; paratypes 2 to 6 coll. M. Jay.

Etymology. Named for its size, after Greek meaning fly.

Remarks. This species resembles *Joculator mygaki* n.sp., but differs from it in its protoconch (wider at apex and with a row of fine axial riblets in and under suture), its slightly larger size (2.2 mm instead of 1.9 mm) and its darker colour. It differs from *J. granata* Kay, 1979, which has a protoconch with the same fine, brephic riblets, in its slightly smaller size (2.2 mm instead of 2.4 mm), its shorter and more swollen shape, and its paler colour.

Joculator phtyr **n.sp.**

Plate 5, G; colour plate I, Fig. 28

Material examined. 2 spmns MNHN; 48 spmns (5 with complete protoconch) coll. M. Jay.

Description. Shell small, pupiform, strongly constricted at base, pointed at apex, with a high conical protoconch; the greatest width at the lower third of teleoconch. Protoconch conical of 5 whorls, slightly convex and smooth, their convexity more marked abapically; apex rounded, limit from teleoconch marked by the development of the 3 cords simultaneously in a vertical line, but without a clear-cut boundary. Teleoconch of 4 flat whorls, 3 spiral cords per whorl, bearing rounded beads, of equal importance on the 3 cords, regularly diminishing in size towards both extremities; beads numbering 19-20 per whorl. Axial ribs joining the beads poorly visible in their intervals. A fourth beaded spiral cord, obviously weaker, emerging from suture at base of last whorl; beads of last whorl becoming weaker and axially elongate towards outer lip of aperture, except the beads of the upper cord which remain rounded. One smooth cord on base, followed by 2 very fine spiral threads on edge of anterior canal. Aperture circular. Colour dark brown to blackish-brown, upper spiral cord and its beads slightly darker. Protoconch of the same colour.
Size: holotype total height 2 mm, maximum width 0.9 mm; height of protoconch 0.44 mm; width of protoconch at base 0.26 mm.

Type locality. Found dead in hand dredged sand at 35 m, off Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN; paratypes 2 to 6 coll. M. Jay.

Etymology. Named for its size, after Greek meaning crablouse.
Remarks. *Prolixodens sknips* n.sp. has the same shape, but is slightly smaller, with teleoconch whorls more numerous, and axially ribbed protoconch. *Dizoniopsis gothica* n. sp. bears only 2 beaded spiral cords per whorl, instead of 3, and has a ribbed protoconch. *Joculator subula* Laseron, 1956, lacks its pointed apex. *Joculator lozoueti* n. sp. is more regularly ovate and larger.

Joculator psyllos **n.sp.**

Plate 4, E; colour plate I, Fig. 29

Material examined. 2 spmns MNHN; 7 spmns (4 with complete protoconch) coll. M. Jay; 2 spmns with complete protoconch coll. J. Drivas.

Description. Shell of very small size, pupiform with strongly constricted base. Protoconch not prominent of 1.25 smooth whorls, appearing finely punctate under microscope, apex rounded; limit from teleoconch clear and oblique, marked by change of colour, but 2 very fine beaded cords begin on last 1/4 whorl. Teleoconch of 6 slightly convex whorls, suture moderately impressed. Three spiral cords per whorl, subequal in middle of shell, the upper cord slightly weaker on earlier whorls. Axial ribs, weaker than cords, crossing them at right angles, with a rounded bead at each intersection, numbering 16 per whorl. A fourth weaker spiral cord emerging from suture at base of last whorl. On last whorl, strongly constricted at base, beads become smaller towards aperture and obsolete on lower cords. Several very fine spiral threads on base. Colour pale brown, apex a little paler, protoconch white.
Size: holotype total height 2.0 mm; maximum width 0.8 mm; height of protoconch 0.19 mm, maximum width of protoconch 0.18 mm.

Type locality. Found dead in hand-dredged sand at 10-20 m, off Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN; paratypes 2 to 5 coll. M. Jay; paratypes 6 and 7 coll. J. Drivas.

Etymology. Named on account of its small size, after Greek meaning “flea”.

Remarks. This species differs from other *Joculator* species in its very short protoconch. Besides, it differs from *Joculator thielei* n.sp. in its more elongate outline and slightly paler colour; it differs from *J. tribulationis* (Hedley, 1909) in its less numerous beads, smaller size, and paler colour; it differs from *Bittium* (*Joculator*) *uveanum* Melvill & Standen, 1896 from Loyalty Isl. in its much shorter protoconch, narrower shape and colour.

Joculator salvati n.sp.

Plate 4, F; colour plate I, Fig. 30

Material examined. 1 spmn MNHN; 3 spmns (1 with complete protoconch) coll. M. Jay.

Description. Shell fusiform, slightly constricted at base. Protoconch conical, extending the general outline of teleoconch, made of 2.5 smooth whorls, under SEM showing a worn surface; apex wide and rounded, limit from teleoconch ill-defined by the progressive development of adult sculpture. Teleoconch of 7 whorls with flat sides, with 3 spiral cords per whorl, crossed at right angles by axial ribs of similar strength, with a rounded bead at each intersection; beads rather widely-spaced and numbering 18-19 per whorl. A fourth beaded cord emerging from suture at base of last whorl. Base with a weak smooth cord. Aperture roundly quadrate. Colour dark brown, beads a little paler, mostly those of the upper cord. First whorl and protoconch white.
Size: holotype total height 3.6 mm; maximum width 1.1 mm; height of protoconch 0.69 mm; width of protoconch at base 0.61 mm.

Type locality. Found dead in hand-dredged sand at 35 m, off Boucan-Canot beach, Saint-Gilles-les-Bains.

Type material. Holotype in MNHN; paratype 1 coll. M. Jay.

Etymology. Dedicated to B. Salvat, a French malacologist.

Remarks. This species has the same shape and colour as *Joculator psyllos* n. sp. but is twice as high, and its protoconch has 2.25 whorls instead of 1.25. It differs from *J. lozoueti* n.sp. in its slightly larger size, less swollen shape, and wider, less elevated protoconch. This species resembles *J. tomacula negrita* Laseron, 1955, from Michaelmas Cay, NE Australia, in its shape, size and colour, but differs from it in its more constricted aperture, and in the paler beads of the upper cord. The holotypes of *J. tomacula* and *J. tomacula negrita* Laseron, 1955 have a broken protoconch.

Joculator skolix n.sp.

Plate 4, G; colour plate I, Fig. 31

Material examined. 2 spmns MNHN; 9 spmns (6 with complete protoconch) coll. M. Jay.

Description. Shell fusiform, narrow, nearly cylindrical and constricted at base. Protoconch narrow and slender, comprising 4 smooth slightly convex whorls, the earlier two finely granulose under microscope and SEM, the last one obviously narrower than the first whorl of teleoconch; suture wide, with very short axial riblets, limited to suture, and numbering 20-22 per whorl; limit from teleoconch a distinct oblique line marked by change of colour, but the 3 beaded spiral cords of adult sculpture develop progressively on last 1/2 whorl. Teleoconch of 7 flat whorls, bearing 3 spiral cords per whorl, crossed at right angles by axial ribs, with a rounded bead at each intersection; beads numbering 20-21 per whorl; the 3 beaded cords subequal in strength. A fourth spiral cord emerging from suture at base of last constricted whorl, and underlining angle of excavated base. Aperture broken on the type, but circular on other specimens. Columella smooth. Colour plain creamy-white.
Size: holotype total height 3.2 mm; maximum width 1 mm; height of protoconch 0.48 mm; width of protoconch at base 0.29 mm.

Type locality. Found dead in hand-dredged sand at 35 m, off Boucan-Canot beach, Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN; paratypes 2 to 7 coll. M. Jay.

Etymology. From Greek meaning maggot, to which this species resembles by shape and colour.

Remarks. This species may recall *Cerithiopsis eutrapela* Melvill & Standen, 1896, but differs from it in its narrower width, its more cylindrical shape (constricted at base, instead of conical), and its 3 rows of beads being equal.

Joculator thielei n.sp.

Plate 5, C; colour plate I, Fig. 32

Material examined. 2 spmns MNHN; 23 spmns (9 with complete protoconch) coll. M. Jay.

Description. Shell very small, pupiform, short, with strongly constricted base. Protoconch prominent, nearly cylindrical, slightly tapering to the wide, rounded apex, and comprising 3.25 convex whorls, looking smooth but worn on type under SEM; limit from teleoconch obliquely marked by change of colour and beginning of adult sculpture. Teleoconch of 5 whorls, with 3 spiral cords per whorl, crossed at right angles by weaker axial ribs, with a rounded bead at each intersection; beads numbering 16 on penultimate whorl. The 3 cords subequal on the entire shell. A fourth spiral cord, smooth and unbeaded, emerging from suture at base of last whorl. On last whorl, the beads of the lower cords become smaller and disappear near aperture. 2 more fine smooth spiral cords on base. Aperture circular. Colour dark blackish-brown, the upper cord a little darker, protoconch whitish.
Size: holotype height 1.5 mm; maximum width 0.5 mm; height of protoconch 0.26 mm; width of protoconch at base 0.22 mm.

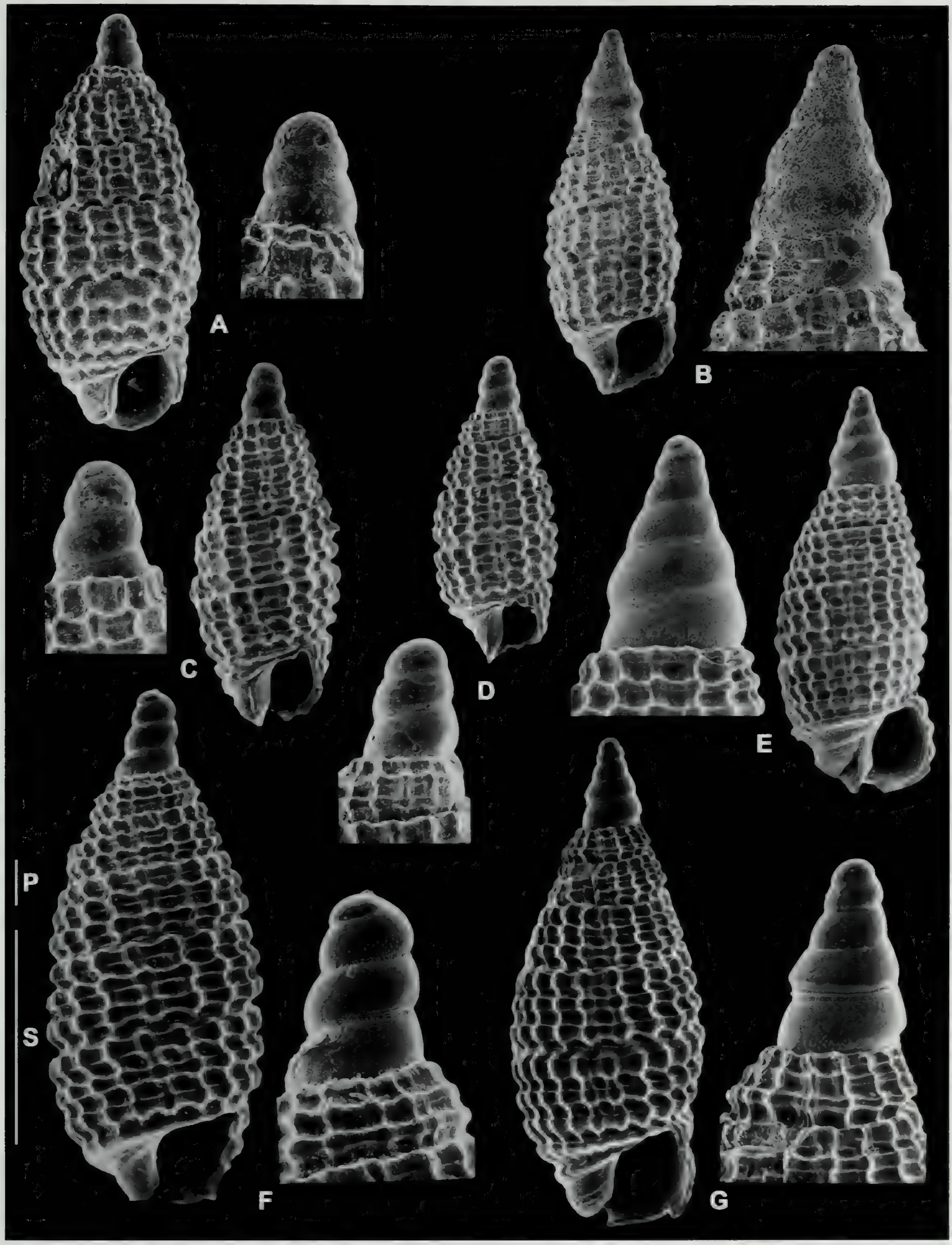

PLATE 5. Fig. A. *Joculator laseroni* n.sp. Off Boucan-Canot beach, Saint Gilles les Bains, 30 m; holotype, height 2.3 mm; MNHN. **Fig. B.** *J. megacephala* n.sp. Off Saint Gilles les Bains, 10-20 m; holotype, height 1.8 mm; MNHN. **Fig. C.** *J. thielei* n.sp. Off Saint Gilles les Bains, 10-20 m; holotype, height 1.5 mm; MNHN. **Fig. D.** *J. vignali* n.sp. Off Souris-Chaude, Trois-Bassins, 30 m; holotype, height 1.4 mm; MNHN. **Fig. E.** *J. mygaki* n.sp. Off Boucan-Canot beach, Saint Gilles les Bains, 30 m; holotype, height 1.9 mm; MNHN. **Fig. F.** *J. melanoraphis* n.sp. Off Saint Gilles les Bains, 10-30 m; holotype, height 2.9 mm; MNHN. **Fig. G.** *J. phtyr* n.sp. Off Saint Gilles les Bains, 35 m; holotype, height 2 mm; MNHN. Scale bars: S (shells): 1 mm; P (protoconchs): 100 μm.

Type locality. Found dead in hand-dredged sand at 10-20 m. off Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN; paratypes 2 to 10 coll. M. Jay.

Etymology. Dedicated to Pr. J. Thiele, who described several species of Cerithiopsidae.

Remarks. This species was compared with the holotype of *Cerithiopsis niasensis*, Thiele, 1925, from Nias Isl. (MNK lot Nr 102725) which has same shape and size, but has a broken protoconch with only a piece of the last smooth whorl left, and has 2 spiral cords per whorl, 3 cords on the last whorl only: thus, following our criteria, this species should be attributed to the genus *Horologica*. Our new species is less ventricose than *Joculator minutissima* Laseron, 1955. It differs from *Joculator psyllos* n. sp. in its more swollen shape and its higher protoconch (3.25 whorls instead of 1.5). It differs from *Joculator phtyr* n.sp. in its more ovate shape and its protoconch more cylindrical than conical of 3.5 whorls instead of 5.

Joculator vignali n.sp.

Plate 5, D; colour plate I, Fig. 33

Material examined. 1 spmn MNHN; 2 spmns (1 with complete protoconch) coll. M. Jay.

Description. Shell very small, fusiform, with cylindrical protoconch, base constricted. Protoconch of 3 moderately convex whorls, with a rounded apex, smooth but granulose under microscope, well delimited from teleoconch by an oblique line marked by change of colour and beginning of adult sculpture. Teleoconch of 4 whorls, with 3 subequal beaded spiral cords per whorl, crossed at right angles by axial ribs, a rounded bead at each intersection; beads numbering 16 per whorl. A fourth weaker beaded spiral cord emerging from suture at base of last whorl. A fifth spiral cord still more weakly beaded at mid-height of base. Aperture circular. Colour golden brown, protoconch white.
Size: holotype total height 1.4 mm; maximum width 0.5 mm; height of protoconch 0.33 mm, width of protoconch at base 0.22 mm.

Type locality. Found dead in hand-dredged sand at 30m off Souris-Chaude, Trois-Bassins.

Type material. Holotype in MNHN; paratype 1 coll. M. Jay.

Etymology. Dedicated to Vignal, malacologist who worked on material from Reunion.

Remarks. This species differs from *Joculator megacephala* n.sp., which is smaller, in its very different protoconch, cylindrical of 3 whorls instead of conical of 5.5 whorls; It differs from *J. mygaki* n.sp., *J. myia* n.sp., and *J. phtyr* n.sp. which are a little larger, by its cylindrical protoconch instead of conical. Il differs from *J. thielei* n.sp. which is the most similar species, in its smaller size, its more slender shape, and its higher protoconch.

Genus ***Horologica*** Laseron, 1956
Type species *Horologica bicolor* Laseron, 1956, Queensland: Shell fusiform with constricted base, teleoconch with 2 beaded spiral cords, protoconch smooth or punctate, without axial ribs or spiral cords.

Horologica balteata Watson, 1886.

Plate 7, A; colour plate II, Fig. 34

Material examined. 1 spmn MNHN; 3 spmns coll. M. Jay; 3 spmns coll J. Drivas; none having a complete protoconch.

Description. Shell pupiform, strongly swollen at middle and constricted at base, apical angle 50°. Protoconch known only by its 2 last smooth whorls, extending the outline of teleoconch, separated from it by an indistinct line marking the beginning of adult sculpture. Teleoconch of 6 whorls, with 2 spiral cords per whorl, crossed by finer axial ribs, with a large rounded bead at each intersection; 17 or 18 beads per whorl; beads of upper cord stronger, axially elongate on penultimate whorl, then incised and divided by a spiral furrow, forming thus a third cord on last whorl, the lower cord always weaker. One more beaded cord, much weaker than the other ones, emerging from suture at base of last whorl. On last part of the very constricted last whorl, the upper cord remains strong, the lower 3 weaker, beads reduced to single swellings; a fine smooth spiral thread on base. The 2 earlier whorls plain white, protoconch brown; on the other whorls of teleoconch, the upper beaded cord white, the lower cord and base pale brown.
Size: maximum height with broken protoconch 3 mm; width 1.1 mm.

Locality. Found dead in hand-dredged sand at 12 m, off Saint-Gilles-les-Bains.

Remarks. This species, characterised by its shape and colour pattern, matches Watson's description and figure in spite of a slight difference in size (2.21 mm for Watson's holotype instead of 2.30 to 3.4 for our specimens). It also matches the description and figure of *Cerithiopsis aeolomitres* Melvill & Standen,1896, which has the same size (2.26 mm for holotype); *Cerithiopsis aeolomitres* Melvill & Standen, 1896, is thus a junior synonym of *Horologica balteata* (Watson, 1886). Our specimens differ from *Cerithiopsis perligera* Thiele, 1925 (MNK lot Nr 67483) which has the same colour pattern, in is obviously smaller size, and its 6 teleoconch whorls instead of 9.

Horologica bicolor Laseron, 1956.

Plate 7, B; colour plate II, Fig. 35

Material examined. 1 spmn MNHN, 7 spmns coll. M. Jay; none having a complete protoconch.

Description. Shell small and pupiform, more slender towards apex than towards the constricted base. Protoconch of our specimens known only by its last smooth whorl, separated from teleoconch by the progressive growth of adult sculpture. Teleoconch of 6 whorls, with 2 spiral cords per whorl, crossed by axial ribs of equal strength, with a more or less rounded bead at each intersection; beads numbering 16-17 per whorl; intervals between cords rather wide. On earlier whorls, lower cord stronger, but the 2 cords equal in the middle of the shell. On last whorl, beads of upper cord incised then divided by a spiral furrow, the median beaded cord so born remaining slightly weaker than the other ones; a fourth spiral cord, with small beads, emerging from suture at base of last whorl. On last whorl near aperture, beads become weaker and axially elongate. One more spiral cord, smooth, at mid-height of base. Aperture quadrangular. Colour cream, the upper cord and its beads chocolate brown.
Size: height without protoconch: 2.1 mm; width 0.9 mm.

Locality. Found dead in hand-dredged sand at 30m, off Saint-Gilles-les-Bains.

Remarks. Our specimens match the description and figure of *Horologica bicolor* Laseron 1956, type locality Michaelmas Cay, NE Australie, but are smaller (2,1 mm instead of 3.2 mm for Laseron); the specimens from Réunion could be considered as a dwarf variety of the species. The species may be confused with several other bicolored species: it differs from *Joculator pulvis* (Issel, 1869), *Joculator eudeli* n.sp. and *Cerithiopsis* (*Joculator*) *insignis* Smith in its 2 cords per whorl instead of 3 since earlier whorls for the 3 last species; it differs from *Dizoniopsis herberti* n.sp. which also has 2 cords, in its smooth protoconch while *D. herberti* has a ribbed protoconch, the ribs of which are well visible even on a fragment. It differs from *Horologica semipicta* (Gould, 1861) in the way the third cord is born, and by its base.

Horologica macrocephala Laseron, 1956.

Plate 6, A; colour plate II, Fig. 36

Material examined. 1 spmn MNHN; 17 spmns, coll. M. Jay; 5 spmns coll. J. Drivas; all with a complete protoconch.

Description. Small shell, pupiform, constricted at base, with prominent protoconch, its height about one third of total height of shell. Protoconch of 5 convex smooth whorls, the last one swollen, the earlier ones tapering regularly to the fine and rounded apex; limit from teleoconch oblique, marked by change of colour and appearance of adult sculpture. Teleoconch of 4 whorls, penultimate one widest. Two beaded spiral cords per whorl, their interval wider than the interval at suture; axial ribs crossing the cords at right angles, with a rounded bead at each intersection; beads numbering 16 per whorl. A third spiral cord, unbeaded or very weakly beaded, emerging from suture at base of last whorl. Aperture quadrangular. Colour golden brown.
Size: height of shell 1.7 mm, maximum width 0.5 mm; height of protoconch 0.45 mm; width of protoconch at base 0.28 mm.

Locality. Found dead in hand-dredged sand at 20-30m, off Saint-Gilles-les-Bains.

Remarks. This species matches on every point the figure and description of *Horologica macrocephala* Laseron, 1956, type locality Darwin, but also found in Indian Ocean (Christmas Isl.). The difference of size (1.7 mm for our specimens and 1.9 mm for Laseron's decription) seems unimportant.

Horologica minareta Laseron, 1955.

Plate 6, B; colour plate II, Fig. 37

Material examined. 1 spmn MNHN; 51 spmns (23 with complete protoconch) coll. M. Jay; 9 spmns coll. Drivas.

Description. Shell fusiform, slender, slightly constricted at base, apical angle 30°. Protoconch conical, prominent, comprising 5 convex, smooth whorls, and forming about 1/5 of total height of shell; its penultimate whorl swollen, earlier whorls tapering to the pointed apex; limit from teleoconch marked by an ill defined oblique line. Teleoconch of 7 whorls, with 2 subequal beaded spiral cords, crossed by slightly weaker axial ribs, with a slightly axially elongate bead at each intersection; beads numbering 22-23 on last whorl, close-set, except on base. Suture weakly impressed. Last whorl and base constricted, the beads of the 2 cords more axially elongate, the axial ribs becoming more conspicuous; a third weakly beaded spiral cord emerging from suture at base of last whorl; one more spiral thread, smooth, at mid-height of base. Aperture quadrangular. Colour plain dark brown including protoconch. Some specimens ill formed or twisted, with supplementary whorls widening after a normally constricted whorl.
Size: maximum height 2.6 mm, maximum width 1.1 mm; height of protoconch 0.42 mm; width of protoconch at base 0.30 mm.

Locality. Found dead in hand-dredged sand at 10-20 m, off Saint-Gilles-les-Bains.

Remarks. This species is characterized by its shape, and by the shape of its protoconch. Our specimens are slightly smaller than the holotype of *Horologica minareta* Laseron, 1955, (type locality Michaelmas Cay, NE Australia), (2.6 mm instead of 2.8).

Horologica purpurea Laseron, 1955.

Plate 7, D; colour plate II, Fig. 38

Material examined. 1 spmn MNHN; 50 spmns coll. M. Jay; 15 spmns coll. J. Drivas; 2 with a complete protoconch.

Description. Shell fusiform, swollen, slender towards apex, slightly constricted at base, angle at apex of teleoconch 30°. Protoconch of 2.5 convex smooth whorls, cylindrical in shape, with rounded apex; SEM reveals very fine axial striae on lower part of whorls; limit from teleoconch clear-cut and oblique, marked by change of colour and appearance of adult sculpture. Teleoconch of 7 or 8 whorls, bearing 2 spiral cords per whorl, crossed by finer axial ribs, with at each intersection, a slightly axially elongate bead; 18 or 19 beads per whorl. The 2 rows of beads subequal on earlier whorls, but on penultimate whorl, the beads of the upper cord are more axially elongate, becoming incised and then divided on last whorl by a spiral furrow. A fourth spiral beaded cord, a little weaker than the other ones, emerging from suture at base of last whorl; one more spiral cord, weak and smooth, at mid-height of base. Aperture roundly quadrate. Colour of teleoconch plain violet, paler near apex, protoconch white.
Size: maximum height 3.1 mm; maximum width 1.2 mm; height of protoconch 0.25 mm; width of protoconch at base 0.24 mm.

Locality. Found dead in hand-dredged sand at 10-20 m off Cap La-Houssaye, Saint-Gilles-les-Bains.

Remarks. Our specimens match the decription and figure of *Horologica purpurea* Laseron, 1955, type locality Heron Isl., but Laseron did not describe the protoconch of the species, remarkable by its size and its colour. All our specimens are smaller than Laseron's holotype (3.1 mm instead of 3.9 mm), and are less cylindrical; but Laseron had noted size and shape variations, with one specimen from Hope Isl. smaller than ours. Our specimens likewise show large variations, with adult teleoconch height ranging from 3.1 mm and 6 whorls, to 1.4 mm and 4 whorls, with all intermediates, each of them with a similar protoconch.

Horologica cf *semipicta* (Gould, 1861)

Plate 7, C; colour plate II, Fig. 39

Material examined. 1 spmn MNHN; 23 spmns coll. M. Jay; none of them having a complete protoconch.

Description. Shell small and pupiform, more slender towards apex than towards the constricted base. Protoconch of our specimens broken and reduced to the last smooth whorl, limited from teleoconch by a clear-cut oblique line. Teleoconch of 6 whorls, with 2 beaded spiral cords per whorl, widely spaced, distinct axial ribs crossing cords at right angles, with one bead at each intersection, beads of upper cord always a little weaker and transversally elongate, beads of the lower cord a little stronger and rounded. On penultimate whorl, a spiral thread develops in interval between the 2 cords, growing into a third beaded cord on last whorl. A fourth spiral cord emerging from suture at base of last whorl, only weakly swollen at intersection with axial ribs. Base smooth. Aperture roundly quadrate. Colour cream, the upper cord and its beads reddish-brown.
Size: height of teleoconch 2.1 mm; width 0.8 mm.

Locality. Found dead and worn in hand-dredged sand at 30 m, off Saint-Gilles-les-Bains.

Remarks. This species resembles *Horologica bicolor* Laseron, 1956, and in the absence of protoconchs, differs from it only in its base being smooth instead of bearing one spiral cord, and in the way the third spiral cord is born on last whorl. Our specimens match the figure of *Cerithiopsis semipicta* Gould, 1861 provided from Hawaii by A. Kay, showing a third spiral beaded cord on last whorl, without visible incision of the upper row; but according to Kay, the species is known from Fiji as *Cerithiopsis balteata* Watson, 1886 from Levuka, Fiji, which we believe is a distinct species. The holotype of *Cerithiopsis semipicta* Gould, 1861, (type locality "China seas"), is, following the original description, a little higher than our specimens (2.4 mm instead of 2.2 mm), with 7 whorls instead of 6 for our specimens; but its protoconch is not described, nor the way the third cord is born. The holotype of Gould figured by Johnson looks very worn, more elongate, and does not show an incision of the upper row of beads. The identification of our species with *Cerithiopsis* (*Horologica*) *semipicta* Gould, 1861 remains doubtful. However, this species could be confused with other pupiform bicolor species: *Joculator pulvis* (Issel, 1869), *Joculator eudeli* n.sp., and *Cerithiopsis* (*Joculator*) *insignis* Smith, 1906, are easily separated, having 3 beaded cords from the earlier whorls; *Dizoniopsis herberti* n.sp.,with its 2 beaded cords, is easily distinguished by its axially ribbed protoconch, the ribs being visible even on a small piece of the protoconch.

Horologica turrigera (Watson, 1886)

Plate 7, E; colour plate II, Fig. 40

Material examined. 1 spmn MNHN; more than 200 spmns coll. M. Jay; more than 50 spmns coll. J. Drivas; all with complete protoconch. This is the only species sometimes found alive.

Description. Shell fusiform, or pupiform elongate, base constricted. Protoconch prominent of 5.5 whorls, slightly convex and smooth, the 2 last of equal width, the earlier ones tapering to the rounded and narrow apex; its limit from teleoconch axially marked by the growth of adult sculpture. Teleoconch of 8 whorls, with 2 beaded spiral cords per whorl, separated by an interval wider than sutural area, and crossed by axial ribs, a little weaker than the cords but distinct. A strong rounded bead at each intersection, beads numbering 18-19 on penultimate whorl. On the 3 last whorls, beads of upper cord stronger and axially elongate, beads of the lower cord remaining rounded. On penultimate whorl, the upper beads incised by a spiral furrow, then divided on last whorl, thus forming a third cord. A fourth cord emerging from suture at base of last whorl, weaker with slight swellings rather than beads. One more spiral cord, smooth, at mid-height of base. Some specimens twisted, with one more whorl, widening after the normal constricted whorl. Colour very pale brown, the apex of the shell and the upper beaded cord yellowish white, protoconch white or weakly tinted.
Size: maximum height 3.7 mm; maximum width 1.2 mm; height of protoconch 0.45 mm; width of protoconch at base 0.30 mm.

Locality. Commonly found dead in hand-dredged sand at 10-20 m, off Saint-Gilles-les-Bains.

Remarks. Our specimens have been found identical to the type of *Cerithiopsis turrigera* Watson,1886, type locality Honolulu, in NHM (Lot Nr 1887.2.9.1643.4).

Horologica anisocorda n. sp.

Plate 6, C; colour plate II, Fig. 41

Material examined. 1 spmn MNHN; 15 spmns (2 with complete protoconch) coll. M. Jay.

Description. Shell fusiform with strongly constricted base. Protoconch continuing the general outline of teleoconch, conical, comprising 4 smooth whorls tapering to rounded apex; a small spiral thread above lower suture; limit from teleoconch oblique marked by change of colour and beginning of adult sculpture. Teleoconch of 6 whorls, 2 spiral cords per whorl, crossed at right angles by subequal axial ribs, with a rounded bead at each intersection; beads numbering 18 per whorl. From the second whorl, beads of upper cord clearly stronger, and becoming progressively more axially elongate towards anterior end; on last whorl, beads of upper cord incised, then divided in 2 parts by a spiral furrow, beads of upper cord remaining larger. A fourth spiral cord, weakly beaded, emerging from suture at base of last whorl. Two more spiral unbeaded cords on base. Aperture rounded. Colour blackish-brown, protoconch white.
Size: holotype total height 2.2 mm, maximum width 0.7 mm; height of protoconch 0.35 mm, width of protoconch at base 0.27 mm.

Type locality. Saint-Gilles-les-Bains, in hand-dredged sand at 30 m.

Type material. Holotype in MNHN, paratypes 1 and 2 coll. M. Jay.

Etymology. Named on account of its 2 strongly unequal beaded cords.

Remarks. This species resembles *Horologica telegraphica* Hedley, 1909, (type locality Hope Isl.) in size, shape, and its 2 unequal beaded cords, but it differs from it in its 6 whorls teleoconch instead of 5, in its 2 beaded cords being more widely spaced, its more numerous beads per whorl, and in the beads of the upper row being divided on last whorl. The protoconch of *H. telegraphica* was not described by Hedley nor by Laseron who figured the species. Our new species differs from *Horologica glaubrechti* n. sp. which is of the same size and colour, in its 2 rows of beads being strongly unequal on the whole height, and in its protoconch of 4 whorls instead of 5. It differs from *Horologica minareta* Laseron, 1956 in its 2 unequal rows of beads, its slightly smaller size, its darker coloration and its 4 whorled protoconch instead of 5.

Horologica glaubrechti n.sp.

Plate 6, D; colour plate II, Fig. 42

Material examined. 2 spmns MNHN; 9 spmns (7 with complete protoconch) coll. M. Jay; 8 spmns coll. J. Drivas.

Description. Shell fusiform, surmonted by a wide and conical protoconch. Protoconch of 5 whorls, convex and looking smooth, but with very fine granulations under SEM; last whorl as wide as the first whorl of teleoconch, separated from it by an oblique line marking the appearance of adult sculpture; earlier whorls regularly tapering towards the rounded apex. Teleoconch of 5 whorls, with 2 spiral cords per whorl, crossed at right angles by axial ribs equal to the cords, with a rounded bead at each intersection; beads numbering 19-20 per whorl, of equal strength on the 2 cords, becoming axially elongate on last whorl; beads

contiguous on cords, but separated axially from the other row, leaving axial ribs clearly visible. On last whorl beads of upper cord become slightly stronger, then incised on last half-whorl, then divided near aperture by a spiral furrow, while all beads become progressively smaller; one more spiral cord, weaker and finely beaded, emerging from suture at base of last whorl; a fourth spiral cord on base, unbeaded, and followed by 4 very fine spiral threads. Aperture circular. Colour plain dark brown, with the upper cord and its beads a little darker, the earlier whorls paler; protoconch white.
Size: holotype total height 2.3 mm; maximum width of shell 1 mm; height of protoconch 0.45 mm; width of protoconch at base 0.30 mm.

Type locality. Off Saint-Gilles-les-Bains, between the harbour and Boucan-Canot beach, in hand-dredged sand at 30-50 m.

Type material. Holotype and paratype 1 in MNHN, paratypes 2 to 7 coll. M. Jay; paratype 8 coll. J. Drivas.

Etymology. Dedicated to Dr. Glaubrecht, MNK, Berlin.

Remarks. This species differs from *Horologica minareta* Laseron, 1956 in its more swollen shape, its larger beads, the sculpture of base, its darker colour, and its white instead of brown protoconch; it differs from *Horologica macrocephala* Laseron, 1956 in the smaller size of its protoconch, its larger size (2.3 mm instead of 1.7 mm), and the sculpture of base. It differs from *Horologica anisocorda* n.sp. which is quite similar, in its more swollen and shorter shape, in the beads of the 2 cords being equal on earlier whorls instead of strongly unequal. It differs from *Dizoniopsis gothica* n.sp. in its smooth instead of ribbed protoconch.

Horologica konops n. sp.

Plate 6, E; colour plate II, Fig. 43

Material examined. 2 spmns MNHN; 9 spmns (6 with complete protoconch) coll. M. Jay; 5 spmns coll. J. Drivas.

Description. Very small shell, elongate, nearly cylindrical, slightly constricted at base. Protoconch conical, wide and high, of 5.5 whorls, convex and smooth, its 2 last whorls swollen; limit from teleoconch along an oblique line marking the change of colour and start of adult sculpture; earlier whorls tapering towards rounded apex. Teleoconch of 5 whorls, 2 beaded spiral cords per whorl, interval between them wider than the interval at suture; weaker axial ribs crossing them at right angles, with a rounded bead at each intersection; beads numbering 17-18 per whorl, subequal on the 2 cords on early whorls, beads of upper cord larger and axially elongate on subsequent whorls. A third beaded cord emerging from suture at base of last whorl. A fine smooth cord on base. Aperture rounded, broken on type. Colour plain cream, protoconch and base a little darker on fresh specimens.
Size: holotype total height 1.7 mm; maximum width 0.5 mm; height of protoconch 0.43 mm; width of protoconch at base 0.31 mm.

Type locality. Found dead in hand-dredged sand at 30 m, off Boucan-Canot beach, Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN, paratypes 2 to 7 coll. M. Jay; paratype 8 coll. J. Drivas.

Etymology. Named from Greek, meaning mosquito, after its size and slenderness.

Remarks. This species resembles *Horologica macrocephala* Laseron, 1956 in its size and the shape of the protoconch, but differs from it in its more cylindrical shape, less swollen at the middle and less constricted at base, its somewhat smaller protoconch (1/4 of total height instead of 1/3), and its more numerous beads (18-19 instead of 16). This new species may be compared to *Horologica martini* n.sp. which has a similar protoconch and colour, but differs from it in being less swollen and of smaller size (1.7 mm instead of 2.2 mm).

Horologica martini n. sp.

Plate 6, F; colour plate II, Fig. 44

Material examined. 2 spmns MNHN; 58 spmns coll. M. Jay; 23 spmns coll. J. Drivas; all with complete protoconch.

Description. Shell fusiform with constricted base, apex of teleoconch topped by the prominent protoconch. Protoconch conical of 5 convex smooth whorls, the last 2 whorls of equal size, their limit from teleoconch unprecise, marked by the progressive development of adult sculpture; the earlier whorls regularly tapering to the rounded apex. Teleoconch of 5-6 whorls, with 2 spiral cords, crossed by slightly finer axial ribs, with a rounded bead at each intersection; beads close-set, subequal on earlier whorls, and numbering 20-21 per whorl. On the 2 last whorls, beads of upper cord stronger and axially elongate, then incised by a spiral furrow, then divided into two beaded cords on last whorl. A fourth beaded cord emerging from suture at base of last whorl. A smooth finer spiral cord at mid-height of base, followed by 4 very fine spiral threads. Towards aperture, the beads progressively reduced to weak axial swellings. Aperture rounded. Colour white, base very pale brown, the lower cord tinted with pale brown

on the 2 last whorls, the upper cord remaining white; this colour pattern disappearing on worn specimens.
Size: holotype total height 2.2 mm; maximum width 0.8 mm; protoconch height 0.44 mm; width of protoconch at base 0.32 mm. Height of specimens ranging from 2.0 to 2.5 mm.

Type locality. Found dead in hand-dredged sand at 30m off Boucan-Canot beach, Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN, paratypes 2 to 15 coll. M. Jay; paratypes 16 to 20 coll. J. Drivas.

Etymology. Dedicated to J.C. Martin, skin diver and collector, who collected the sand in which the first specimen was found.

Remarks. This species has the same outline as *Horologica turrigera* Watson, 1886, of which it could be considered as a dwarf form (2.2 mm instead of 3.7mm), but no intermediate exists between the 2 forms, even though many specimens of the 2 species could be found. This species differs from *Horologica balteata* Watson, 1886, which has a similar colour pattern, in its smaller size (2.2 mm instead of 3 mm), less rounded shape, and its less neatly marked colour pattern. It differs from *Horologica macrocephala* Laseron, 1956, in its larger size (2.2 mm instead of 1.7 mm), in the proportionally smaller size of its protoconch, and its colour pattern. *Horologica konops* n.sp. which has a comparable protoconch, is less swollen and smaller (1.7 mm instead of 2.2 mm).

Genus ***Dizoniopsis*** Sacco, 1895
Type species: *Cerithium bilineatum* Hörnes, 1855, type locality Tertiary banks of Piémont: teleoconch with 2 beaded spiral cords per whorl, protoconch bearing axial ribs, extending from suture to suture, with smooth intervals (*Dizoniopsis* ss). We provisonally consider as *Dizoniopsis* (sl) the species with 2 spiral beaded cords per teleoconch whorl, with protoconchs bearing spiral cords in intervals betwen the ribs (type 3) or with axial ribs that do not reach the upper suture (type 4).

***Dizoniopsis gothica* n.sp.**
Plate 9, C; colour plate II, Fig. 45

Material examined. 2 spmns (1 with complete protoconch) MNHN: 7 spmns (1 with complete protoconch) coll. M. Jay; 2 spmns (1 with complete potoconch) coll. J. Drivas.

Description. Teleoconch pupiform, with pointed apex, topped by the prominent protoconch, general outline recalling that of a gothic tower; apical angle of teleoconch 55°; maximum width at the penultimate whorl; base slightly constricted. Protoconch high, nearly cylindrical, consisting in 4.5 convex whorls; its earliest 1.5 whorls smooth, the subsequent whorls with their upper 1/3 concave, smooth and finely frosted, their lower 2/3 convex and bearing slightly prosocline axial ribs (ribbed protoconch of type 4). Teleoconch of 6 whorls, rather low, suture moderately impressed; 2 spiral cords per whorl, crossed at right angles by axial ribs weaker than cords, reaching upper and lower suture, but discontinuous from one whorl to another; a rounded bead at each intersection, beads rather small and widely-spaced, numbering 20-21 per whorl. On last whorls, beads of upper cord progressively axially elongate, incised on last whorl and divided near aperture by a spiral furrow. A fourth spiral cord emerging from suture at base of constricted last whorl, finer and bearing finer beads. Beads of the 4 cords becoming smaller towards outer edge of aperture, axial ribs becoming predominant. A fifth fine, smooth, unbeaded cord on base. Aperture roundly quadrate. Colour blackish-brown, protoconch and the first 2 whorls of teleoconch clearly paler or creamy-white.
Size: holotype total height 2.7 mm; maximum width 1.2 mm; height of protoconch 0.42 mm; maximum diameter of protoconch 0.33 mm.

Type Locality. Found dead in hand-dredged sand at 10-20 m, off Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 (without protoconch) in MNHN; paratype 2 coll. M. Jay; paratype 3 coll. J. Drivas.

Etymology. Named after the general shape and the prominent protoconch, recalling gothic churches.

Remarks. This species differs from *Dizoniopsis herosae* n.sp. in its more swollen shape, and its protoconch, the protoconch of *D. herosae* n.sp. being shorter with axial ribs extending from suture to suture. *D. herberti* n.sp. which has a similar protoconch of type 4, is easily separated by its colour pattern.

***Dizoniopsis herberti* n.sp.**
Plate 9, B; colour plate II, Fig. 46

Material examined. 2 spmns MNHN; 10 spmns (3 with complete protoconch) coll. M. Jay.

Description. Shell pupiform with constricted base, and pointed apex surmonted by the prominent protoconch. Protoconch of 4.5 convex whorls, the first 1.5 smooth, the following ones with axial riblets, numbering 18-19 per whorl, slightly prosocline, present only on the lower 3/4 of whorls, leaving smooth and concave the upper 1/4 (ribbed protoconch of type 4). Teleoconch of 6 whorls, with 2 beaded spiral cords per whorl, crossed at right angles by distinct flattened axial ribs, with a rounded bead at each intersection; beads numbering 19 or 20 per whorl; beads of lower cord slightly stronger and

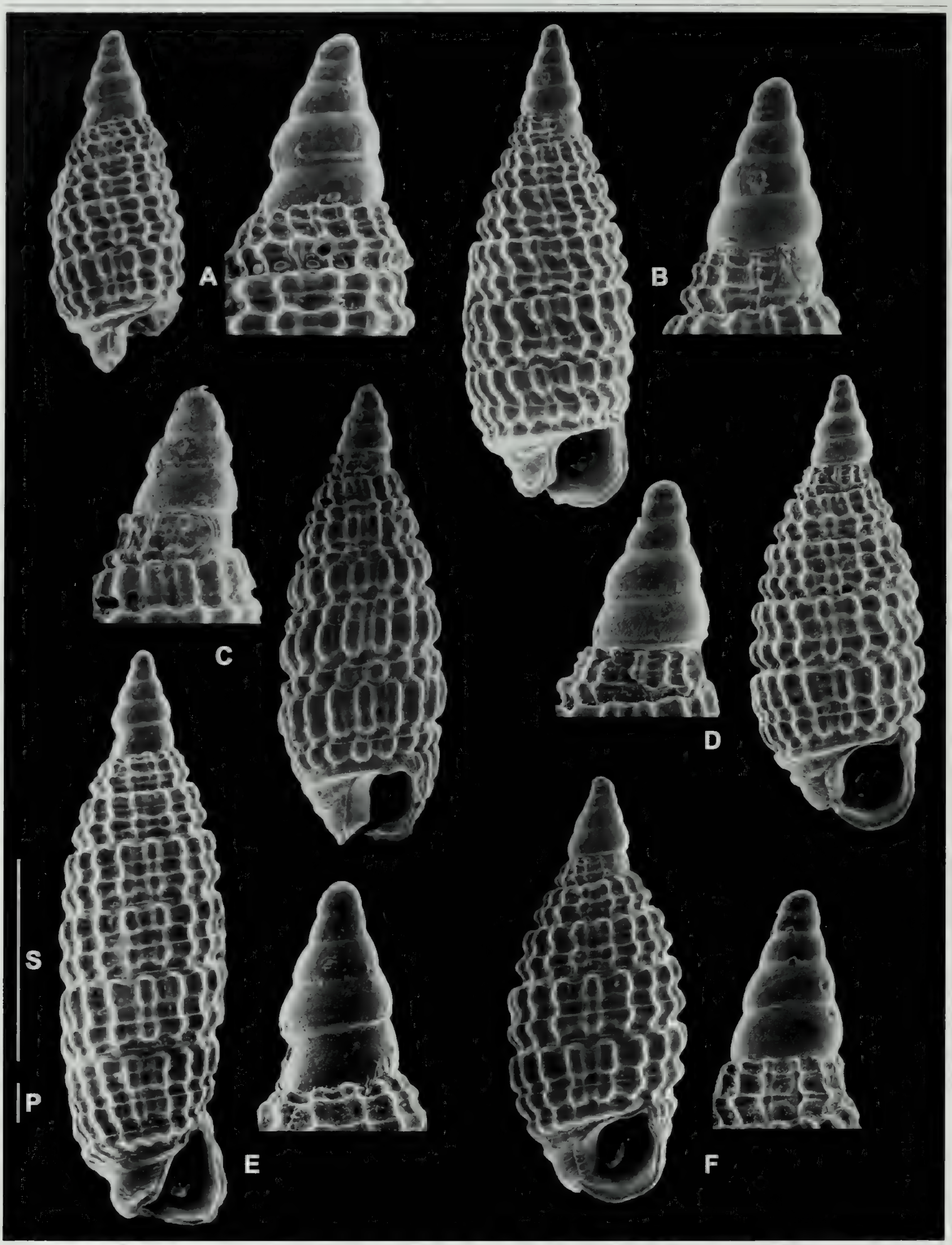

PLATE 6. Fig. A. *Horologica macrocephala* Laseron, 1956. Off Saint Gilles les Bains, 20-30 m; height 1.7 mm; MNHN. **Fig. B.** *H. minareta* Laseron, 1956. Off Saint Gilles les Bains, 10-20 m; height 2.6 mm; MNHN.
Fig. C. *H. anisocorda* n.sp. Off Saint Gilles les Bains, 30m; holotype, height 2.2 mm; MNHN.
Fig. D. *H. glaubrechti* n.sp. Off Saint Gilles les Bains, 30-50 m; holotype, height 2.3 mm; MNHN.
Fig. E. *H. konops* n.sp. Off Boucan-Canot beach, Saint Gilles les Bains, 30 m; holotype, height 3mm; MNHN.
Fig. F. *H. martini* n.sp. Off Boucan-Canot beach, Saint Gilles les Bains, 30 m; holotype, height 2.7 mm; MNHN.
Scale bars: S (shells): 1 mm; P (protoconchs): 100 µm.

axially elongate. On the 5th whorl, a third finely beaded spiral cord develops from a fine thread between the 2 earlier cords, and becomes comparable to them but slightly weaker on last whorl; a fourth weaker beaded spiral cord emerging from suture at base of last whorl, the beads of all cords becoming smaller towards outer edge of aperture. A fifth flattened smooth cord on base. Aperture circular. Colour cream to pale orange-beige, the upper cord and its beads reddish-brown, the median cord on last whorl between these two colours. Protoconch brown.
Size: total height 2.4 mm; maximum width 0.9 mm; height of protoconch 0.4 mm; width at base of protoconch 0.3 mm.

Type locality. Found dead in hand-dredged sand at 10-20 m off Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN; paratypes 2 to 4 coll. M. Jay.

Etymology. Dedicated to Dai Herbert, Natal Museum.

Remarks. The teleoconch of our species resembles a specimen labelled *Cerithiopsis insignis* E.A. Smith, 1906, from Southern Africa, in NHM (lot Nr. 1906.6.23.10, type material, syntype?); this specimen has no protoconch, 3 beaded spiral cords only on last whorl, and 2 cords only on earlier whorls. But Smith described the species (type locality Port Shepstone, South Africa) as bearing 3 beaded spiral cords, the median one weaker, and his figure shows 3 subequal spiral cords from the first whorl of teleoconch. Topotypic specimens from Port Shepstone, in Natal Museum, have no protoconch and 3 beaded spiral cords on all whorls of teleoconch, equal, or the median cord slightly weaker on a few specimens; other specimens from Durban area, similar to the specimens from Port Shepston, have a smooth 4,5 whorled protoconch (personal communication from D. Herbert, Natal Museum): these specimens match the description and figure of Smith, but differ from the type material in NHM in the number of spiral cords on the teleoconch. We think that these specimens are the real *Cerithiopsis insignis*, and that the syntype in NHM is another species. Our specimens with the costate protoconch are also another species, for which we propose the name *Dizoniopsis herberti*. Furthermore, *Dizoniopsis herberti* n.sp. differs from other bicolored species, namely *Horologica bicolor* (Laseron, 1955), *Horologica semipicta* (Gould, 1861), *Joculator pulvis* Issel, 1869, *Joculator eudeli* n.sp., in its axially ribbed protoconch (instead of smooth). This species is referred to the genus *Dizoniopsis* on account of its ribbed protoconch and its 2 spiral beaded cords on the earlier whorls of the teleoconch.

Dizoniopsis herosae n.sp.

Plate 9, A; colour plate II, Fig. 47

Material examined. 2 spmns MNHN; 32 spmns (12 with complete protoconch) coll. M. Jay; 11 spmns coll. J. Drivas.

Description. Shell small and fusiform, strongly constricted at base, apical angle 25°, the greatest width at the lower third of total height. Protoconch elongating the general outline of teleoconch, consisting in 2.5 convex whorls, well delimited from teleoconch by the clear-cut change of sculpture; apex rounded and smooth, subsequent whorls with strong axial ribs, extending from suture to suture, numbering 15-16 on last whorl, their intervals smooth. Teleoconch of 8 whorls, suture shallow. 2 beaded spiral cords per whorl, situated near upper and lower sutures, with a wide interval; 18 to 20 axial ribs per whorl, wide and low, crossing the cords at right angles, with a rounded bead at each intersecton. A third beaded spiral cord on last whorl, developed from a fine thread between the 2 main cords, and remaining weaker than them. A fourth weak, unbeaded spiral cord emerging from suture at base of last whorl, followed immediately by a fifth spiral cord equal to it. Beads becoming smaller towards aperture. Aperture circular. Colour plain pale brown, suture a little darker, protoconch and the 3 earlier whorls of teleoconch creamy-white.
Size: holotype total height 3.3 mm; maximum width 1.3 mm; height of protoconch 0.49 mm; width of protoconch at base 0.36 mm.

Type locality. Found dead in hand-dredged sand at 30 m, Souris-Chaude, Trois-Bassins.

Type material. Holotype and paratype 1 in MNHN, paratypes 2 to 12 coll. M. Jay; paratypes 13 to 15 coll. J. Drivas.

Etymology. Dedicated to Mrs Virginie Heros, MNHN.

Remarks. This species could be confused, in its shape and colour, with *Joculator keratochroma* n. sp., but differs from that in its larger size, its 2 cords instead of 3, and its ribbed protoconch instead of smooth. It differs from *Horologica turrigera* (Watson, 1886) and *Horologica martini* n.sp. in its ribbed protoconch. It differs from *Dizoniopsis gothica* n.sp. in its colour (pale brown instead of black), and its ribbed protoconch of 2.5 whorls instead of 4.5. It differs from other species of *Mendax* and *Prolixodens* in its 2 beaded cords on teleoconch whorls instead of 3.

Genus ***Mendax*** Finlay, 1927

Type species *Cerithiopsis trizonalis* Odhner, 1924, North Island, New Zealand: spire high, teleoconch with 3 beaded spiral cords per whorl. Protoconch with axial ribs extending from suture to suture. 2 species with spiral cords in the intervals between protoconch ribs are provisionally attributed to the genus.

Mendax mascarenensis n.sp.

Plate 8, C; colour plate II, Fig. 48

Material examined. 2 spmns MNHN; 4 spmns (3 with complete protoconch) coll. M. Jay; 3 spmns coll. J. Drivas.

Description. Shell with high spire, slightly fusiform, base not constricted. Protoconch rather cylindrical of 4 convex whorls, the earlier 1.5 appearing smooth by the naked eye, but bearing fine close-set granules under SEM, the subsequent whorls with axial riblets, extending from suture to suture, weak but clearly visible under oblique light; their intervals smooth. Limit from teleoconch oblique marked by change of colour and start of adult sculpture. Teleoconch of 9 whorls, with 3 beaded cords per whorl, equal on last whorl, but upper cord smaller and contracted on all preceeding whorls. Intervals between cords rather wide, with distinct axial ribs joining the beads at right angles. A fourth weaker cord emerging from suture at base of last whorl. Aperture rather quadrangular. Colour plain bright orange-brown, protoconch white.
Size: total height 4.2 mm; maximum width 1.1 mm; height of protoconch 0.52 mm; width at its base 0.33 mm.

Type locality. Found dead in hand-dredged sand at 30 m, off Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN; paratypes 2 to 4 coll. M.Jay; paratype 5 coll. J. Drivas.

Etymology. Named after Mascarene Isl. since Melvill knew this species from Mauritius.

Remarks. Our specimens were compared with the specimens of a lot labelled *Cerithiopsis aurantiaca* Melvill & Standen, 1896, in NMW (lot N° Z.1955.158.02268) from Mauritius: this lot includes 4 specimens, only one of them with its axially ribbed protoconch, and quite identical to ours; 2 other specimens with identical teleoconch but without protoconch; the fourth specimen, with only the last whorl of a smooth protoconch, and the upper spiral cord of teleoconch weaker and darker, is a quite different species. Another lot in NMW from Lifu (lot N° Z.1955.158.00189), labelled syntypes of *Cerithiopsis aurantiaca* Melvill & Standen, 1896, includes 2 specimens without protoconch, which look identical to ours after their teleoconchs, but could be attributed to any of our 9 species discussed above with *Cerithiopsis boucheti* n.sp. But the holotype of *Cerithiopsis aurantiaca* Melvill & Standen, 1896, type locality Loyalty Isl. in MM has no protoconch left, and a teleoconch obviously wider than our specimens and specimens in NMW. The specimens labelled syntypes in NMW are then another species, difficult to identify without protoconch. Our specimens, identical to the specimens from Mauritius in NMW, belong certainely to another species, which seems undescribed, and for which we propose the name of *Mendax mascarenensis*.
Besides, the name *Cerithiopsis aurantiaca* attributed by Melvill & Standen to the holotype in MM, is preoccupied by *Cerithiopsis aurantiaca* Gould, 1861, which is a quite different species. For the species of Melvill and Standen, we propose here a new name, *Cerithiopsis melvilli* nom. nov., in honour of J.C. Melvill; but without a protoconch, assigning it to a genus is quite impossible and it will provisionnally be left in the genus *Cerithiopsis*.

Mendax metivieri n. sp.

Plate 8, B; colour plate II, Fig. 49

Material examined. 2 spmns MNHN; 105 spmns Coll. M. Jay; 20 spmns coll. J. Drivas; all with complete protoconch.

Description. Shell fusiform, protoconch extending general outline of teleoconch, last whorl not constricted; all whorls strongly convex giving the shell a characteristic profile. Protoconch of 2.5 whorls, with axial ribs extending from suture to suture, numbering 18-19 per whorl, their intervals with much finer, close-set spiral cords (ribbed protoconch of type 3); limit from teleoconch progressive along 1/4 whorl. Teleoconch of 9 convex whorls, suture deeply impressed, 3 spiral cords per whorl, crossed at right angles by axial ribs, with a big rounded bead at each intersection; beads numbering 19 or 20 on penultimate whorl. The upper spiral cord hardly visible on first whorl, very weak on the 2 following whorls, but equal to the other ones on last whorls. Last whorl with a fourth spiral cord emerging from suture, weaker than the other ones, and underlining angle with the excavated base; a fifth spiral cord, weak and unbeaded, at the upper part of base. On last whorls, suture marked by a fine spiral thread. Aperture trapezoidal with its upper and outer angle acute. Colour plain golden brown, with a reddish gleam on fresh specimens; protoconch brown or white.
Size: maximum height of shell 4.3 mm; width at base 1 mm; height of protoconch 0.40 mm; width at its base 0.35 mm.

Type locality. Found dead in hand-dredged sand at 30-50 m, off Saint-Gilles-les-Bains, between harbour and Boucan-Canot beach.

Type Material. Holotype and paratype 1 in MNHN, paratypes 2 to 20 coll. M. Jay; paratype 21 to 25 coll. J. Drivas.

Etymology. Dedicated to Mr. Bernard Metivier, MNHN.

Remarks. This species recalls *Mendax ribesae* n. sp. in its shape and colour, but differs in that its protoconch bears spiral cords.

Mendax penneyi n.sp.

Plate 8, A; colour plate II, Fig. 50

Material examined. 1 spmn MNHN; 4 spmns (1 with complete protoconch) coll. M. Jay; 2 spmns coll. J. Drivas.

Description. Shell fusiform, with moderately constricted base, apex surmonted by the prominent cylindrical protoconch. Protoconch of 4.5 whorls, the earlier 1.5 smooth with rounded apex, the following ones with axial ribs extending from suture to suture, their intervals smooth (ribbed protoconch of type 1); limit from teleoconch oblique, marked by change of colour, but adult sculpture develops progressively on last half-whorl. Teleoconch of 7 whorls, 3 spiral cords per whorl, crossed at right angles by a little weaker axial ribs, with a rounded bead at each intersection; beads numbering 18 or 19 per whorl, the 3 spiral cords subequal. A fourth unbeaded spiral cord emerging from suture at base of last whorl. A strong smooth cord at mid-height of base. Colour white, the upper beaded cord very pale brown on fresh specimens.
Size: total height 4.1 mm; maximum width 1.4 mm; height of protoconch 0.58 mm; width of protoconch at base 0.32 mm.

Type locality. Found dead in hand-dredged sand at 10-20 m, off Saint-Gilles-les-Bains.

Type material. Holotype in MNHN, paratype 1 coll. M. Jay.

Etymology. Dedicated to Dr. David Penney, assistant keeper of Zoology, Manchester Museum.

Remarks. The teleoconch of this species is similar to that of *Cerithiopsis hedista* Melvill & Standen, 1896 (type locality Loyalty Isl.) in its size, sculpture and colour pattern; but the holotype of *Cerithiopsis hedista* in MM (lot EE 3743) has 4 whorls of protoconch left, with a broken summit, these 4 whorls slightly convex and smooth; this character is quite distinctive from our species. The colour pattern of *Mendax penneyi* n.sp. recalls that of *Cerithiopsis eutrapela* Melvill & Standen, 1896, from which it is easily separated by its smaller size, its 3 equal cords, and ribbed protoconch.

Mendax ribesae n.sp.

Plate 8, D; colour plate II, Fig. 51

Material examined. 2 spmns MNHN; 1 spmn coll. M. Jay; 1 spmn coll. J. Drivas; all with complete protoconch.

Description. Shell small and slender, fusiform, slightly constricted at base. Protoconch conical of 4.5 whorls, slightly convex, apex rounded, the first whorl smooth, the following 3 with fine axial ribs, extending from suture to suture, numbering 20 per whorl, their intervals smooth; suture with very fine close-set axial threads (ribbed protoconch of type 2); limit from teleoconch oblique, marked by change of sculpture and colour. Teleoconch of 5 slightly convex whorls and impressed suture. 3 beaded spiral cords per whorl, the uppermost one weaker and recessed except on last whorl where the 3 cords are subequal; finer axial ribs, crossing them at right angles, with one bead at each intersection, beads numbering 20-21 per whorl. A fourth spiral cord weaker, and bearing finer beads emerging from suture at base of last whorl. One more fine smooth cord at mid-height of the excavated base. Aperture rounded. Colour pale orange-brown, base slightly darker, protoconch white.
Size: holotype total height 2.6 mm; maximum width 0.8 mm; height of protoconch 0.5 mm; width of protoconch at base 0.4 mm.

Type locality. Found dead in hand-dredged sand at 55 m, off Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN, paratype 2 coll. M. Jay; paratype 3 coll. J. Drivas.

Etymology. Dedicated to Mrs Sonia Ribes, curator of the Natural history Museum of Saint Denis, La Réunion.

Remarks. This species has the same size as *Mendax theodosiae* n.sp. but differs from it in its narrower width, weak and recessed upper cord, and colour. The other species of *Mendax* collected on Reunion are much larger. This species is easily separated from *Joculator* species of the same size, by its ribbed protoconch.

Mendax theodosiae n.sp.

Plate 8, E; colour plate II, Fig. 52

Material examined. 2 spmns MNHN; 9 spmns coll. M. Jay; 3 spmns coll. J. Drivas.

Description. Shell pupiform with strongly constricted base, more slender towards apex, topped by the prominent and pointed protoconch, its maximum diameter at the lower 1/3 of teleoconch. Protoconch of 4.5 convex whorls, the earlier 1.5 whorl with rounded apex, looking smooth but showing under SEM, a narrow spiral row of close-set axial riblets, numbering about 50 per whorl, situated in suture and extending shortly on the upper part of lower whorl; following whorls bearing strong axial ribs numbering 18-20 per whorl, with the same very narrow row of axial riblets in and under suture (ribbed protoconch of type 2); limit from teleoconch oblique marked by change of colour, but adult sculpture develops progressively on the last half-whorl. Teleoconch of 6 slightly convex whorls, suture shallow. 3 spiral cords per whorl,

except on the 2 earlier whorls where there are only 2 cords, the other one originating on the second whorl, between the 2 earlier cords, becoming equal to the other ones on the third whorl. Axial ribs weaker than cords, crossing them at right angles, and numbering 18 on penultimate whorl, with a rounded bead at each intersection. Last whorl strongly constricted at base, a fourth weakly beaded spiral cord emerging from suture at its base. On the last half-whorl, beads become weaker and more axially elongate towards the outer lip of aperture. A fifth spiral cord, smooth, on base. Colour dark brown to golden brown, the earlier whorls of teleoconch paler, protoconch white.
Size: holotype total height 3.3 mm; maximum width 1.2 mm; height of protoconch 0.73 mm; width of protoconch at base 0.42 mm.

Type locality. Found dead in hand-dredged sand from 10-20 m, off Saint-Gilles-les-Bains, between harbour and Boucan-Canot beach.

Type material. Holotype and paratype 1 MNHN, paratypes 2 to 7 coll. M. Jay; paratype 8 coll. J. Drivas.

Etymology. Dedicated to Mrs Theodosia Drivas.

Remarks. This species differs from other *Mendax* species in its characteristic protoconch, bearing under suture the narrow row of fine axial riblets; besides, it differs from *Mendax ribesae* n.sp. which has a similar colour, in its shorter and more compact shape, and its size (2.7 mm instead of 4.1mm); it differs from *Mendax metivieri* n.sp. which has the same colour, in its shorter and more compact shape and its size (2.7 mm instead of 4.5 mm). It is easily separated from *Prolixodens sknibs* n.sp. in its higher and differently sculptured protoconch (protoconch of type 2 instead of type 4), and its colour less blackish. *Joculator lozoueti* n.sp., which has a similar shape, is somewhat larger and has a smooth protoconch.

Genus ***Prolixodens*** Marshall, 1978
Type species: *Cerithiopsis infracolor* Laseron, 1951, Long Reef, NSW, Australia: teleoconch with 3 beaded spiral cords per whorl, protoconch with axial ribs on the lower 2/3 of whorls, the upper 1/3 smooth or punctate (ribbed protoconch of type 4).

***Prolixodens nicolayae* n. sp.**

Plate 8, F; colour plate II, Fig. 53

Material examined. 2 spmns MNHN; 1 spmn coll M. Jay; 1 spmn coll. J. Drivas; all with complete protoconch.

Description. Shell very small, fusiform, with constricted base, and relatively high protoconch. Protoconch conical with pointed apex, comprising 4 strongly convex whorls, the first one slightly granular, the following ones with axial ribs on the lower 2/3 of whorls, the upper 1/3 slightly concave and granulous; no spiral sculpture on protoconch; limit from teleoconch clear-cut and oblique, marked by change of colour and sculpture. Teleoconch of 4 whorls, bearing 3 beaded spiral cords per whorl, the upper one weaker and recessed, becoming nearly equal to the other ones on last whorl; weaker axial ribs crossing them at right angles, with a rounded bead at each intersection; beads numbering 16 per whorl. A fourth spiral cord, finely beaded, emerging from suture at base of last whorl; a fifth smooth spiral cord on base. Colour creamy-white, protoconch more milky white.
Size: holotype total height 1.4 mm; maximum width 0.6 mm; height of protoconch 0.40 mm; width of protoconch at base 0.29 mm.

Type locality. Found dead in hand-dredged sand at 30m, off Souris-Chaude, Trois-Bassins.

Type material. Holotype and paratype 1 in MNHN, paratype 2 coll. M. Jay; paratype 3 coll. J. Drivas.

Etymology. Dedicated to Mrs K. Nicolay, foundress of "La Conchiglia".

Remarks. This species differs from *Prolixodens sknips* n.sp. the protoconch of which is of similar type, in its less swollen shape, smaller size (1.4 mm instead of 1.8 mm) and colour (cream instead of blackish-brown); it differs from *Dizoniopsis gothica* n.sp. and from *Dizoniopsis herberti* n.sp. the protoconch of which is also of similar type, in its teleoconch with 3 beaded spiral cords instead of 2, its shape and colour.

***Prolixodens sknips* n.sp.**

Plate 8, G; colour plate II, Fig. 54

Material examined. 2 spmns MNHN; 7 spmns (1 with complete protoconch) coll. M. Jay; 2 spmns coll. J. Drivas.

Description. Shell pupiform, strongly swollen, the maximum diameter at the middle of teleoconch, base strongly constricted, and apex topped by the prominent protoconch. Protoconch of 3.5 whorls, the first one rounded and finely granular, the following ones with axial ribs numbering 20-21 per whorl, appearing only on the lower 2/3 of whorls, the upper 1/3 being concave and finely granular; limit from teleoconch axial, marked by change of colour and development of spiral sculpture. Teleoconch of 6 slightly convex whorls, suture shallow. 3 spiral cords per whorl, crossed at right angles by weaker axial ribs, numbering 16 on penultimate whorl. A strong rounded bead at each inersection, beads more close-set axially than spirally; the 3 cords subequal, in spite of the narrowing of both ends of shell. A fourth spiral cord emerging from suture at base of last whorl, with only weak swellings; a fifth unbeaded smooth cord on base, and

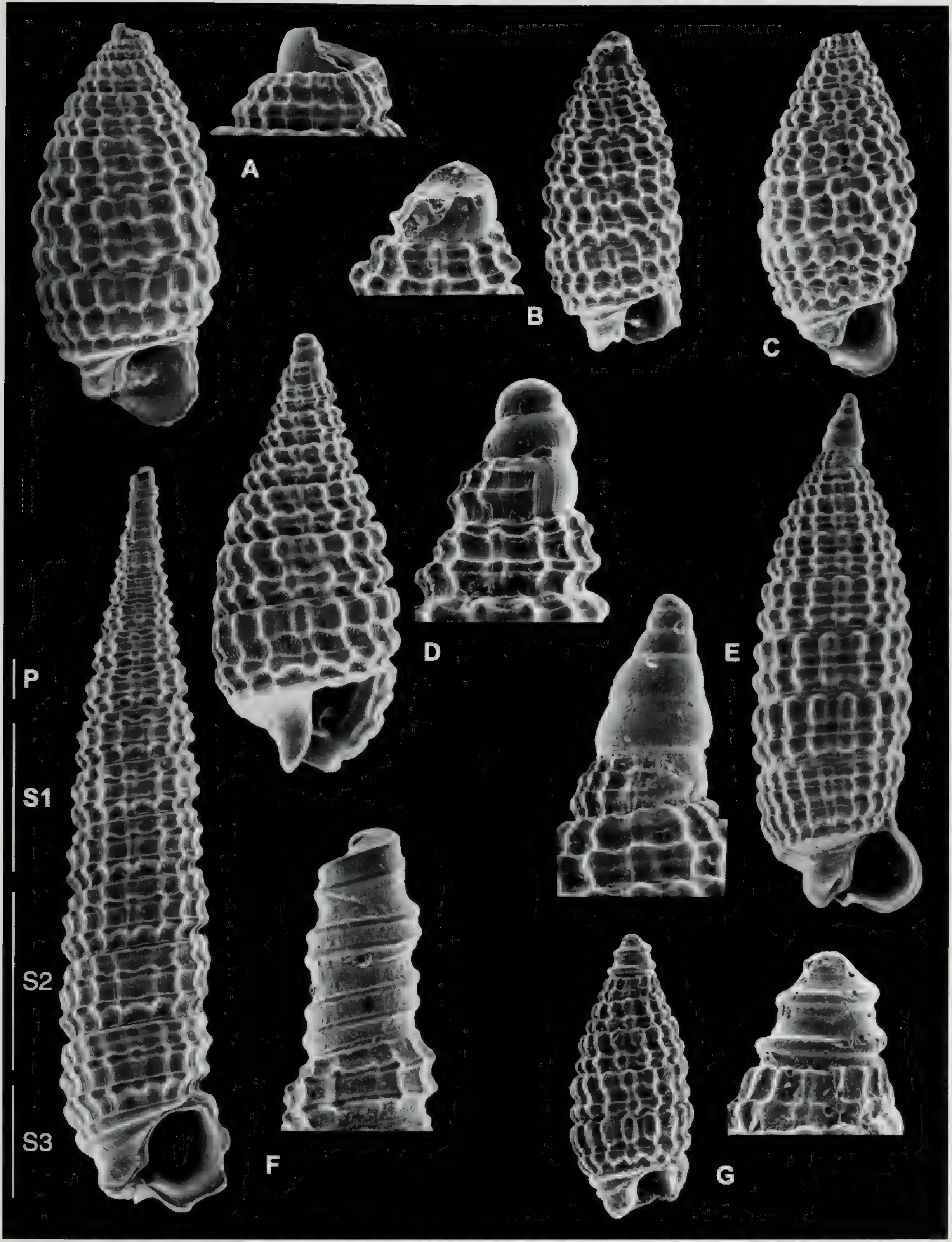

PLATE 7. Fig. A. *Horologica balteata* (Watson, 1886). Off Saint Gilles les Bains, 12m; height 3 mm; MNHN. **Fig. B.** *H. bicolor* Laseron,1956. Off Saint Gilles les Bains, 30 m; height 2.1 mm; MNHN. **Fig. C.** *H. cf semipicta* (Gould, 1861). Off Saint Gilles les Bains, 30 m; height 2.1 mm; MNHN. **Fig. D.** *H. purpurea* Laseron, 1955. Off Cape La Houssaye, Saint Gilles les Bains, 10-20 m; height 3.1 mm; MNHN. **Fig. E.** *H. turrigera* (Watson, 1886). Off Saint Gilles les Bains, 10-20 m; height 3.7 mm; MNHN. **Fig. F.** *Belonimorphis belonimorphis* n.sp. Off Saint Gilles les Bains, 10-30 m; holotype, height 6 mm; MNHN. **Fig. G.** *Koilofera koilofera* n.sp. Off Saint Gilles les Bains, 10-30 m; holotype, height 2.7 mm; MNHN.
Scale bars: S (shells): 1 mm; P (protoconchs): 100 μm.

below it, several fine spiral threads visible under microscope. Aperture circular. Colour plain dark brown to blackish-brown, with reddish gleam on fresh specimens, protoconch paler brown with white apex.
Size: holotype total height 1.8 mm; maximum width 0.9 mm; height of protoconch 0.25 mm; width of protoconch at base 0.25 mm.

Type locality. Found dead in hand-dredged sand at 10-30 m, off Saint-Gilles-les-Bains, between harbour and Boucan-Canot beach.

Type material. Holotype and paratype 1 in MNHN, paratypes 2 coll. M. Jay; paratype 3 coll. J. Drivas.

Etymology. Named for its size after Greek, meaning small fly.

Remarks. This species differs from *Prolixodens nicolayae* n. sp. in its size (1.8 mm instead of 1.4 mm), shape, equal spiral cords instead of unequal, and shorter protoconch (3.5 whorls instead of 4.5). It resembles *Dizoniopsis gothica* n. sp. in the sculpture of the protoconch, but differs from that species in its 3 beaded cords on teleoconch whorls instead of 2; it is easily separated from *Koilofera koilofera* n.sp. and from small species of *Joculator* in its ribbed protoconch. The *Prolixodens* species of Marshall (1978) are much larger.

Genus ***Belonimorphis*** n. gen.
Teleoconch conical elevated and narrow with 3 spiral cords. Protoconch high, cylindrical, each whorl convex with 2 spiral keels, and without axial ribs. Type species: *Belonimorphis belonimorphis* n.sp.

***Belonimorphis belonimorphis* n.sp.**

Plate 7, F; colour plate II, Fig. 55

Material examined. 2 spmns MNHN; 200 spmns (100 with complete protoconch) coll. M. Jay; 50 spmns coll. J. Drivas.

Description. Shell fusiform, high and slender, tapering regularly to the apex of teleoconch, protoconch more elevated and pointed. Protoconch of 3.5 whorls, nearly equal in diameter, and thus cylindrical; each whorl strongly convex bearing 2 prominent and well separated spiral keels, without any other sculpture; limit from teleoconch ill-defined, marked by the development of axial ribs. Teleoconch of 11 or 12 whorls with fine, prominent, widely spaced spiral cords, numbering 2 on earlier whorls, 3 on the following ones, the new cord originating immediately under the upper suture; this upper cord remaining weaker except on last whorl. Rounded axial ribs, a little weaker than the cords, crossing them at right angles, and numbering 18-19 per whorl; each intersection with a small bead, more or less rounded, sometimes reduced to a faint swelling. Numerous close-set axial riblets well visible under microscope, on the whole surface including spiral cords, axial ribs and their intervals, numbering 18 or 19 on each axial rib and the near interval, totalling 400 per whorl. A fourth spiral cord emerging from suture at base of last whorl, as strong as the other cords, but bearing only faint swellings rather than beads. A fifth spiral cord, smooth and unbeaded, at mid-height of base. Aperture circular, anterior canal markedly oblique. Colour dark blackish brown to golden brown, the 3 earlier whorls of teleoconch and protoconch white.
Size: holotype total height 6 mm; width at base 1.5 mm; height of protoconch 0.74 mm; maximum width of protoconch 0.40 mm.

Type locality. Found in hand-dredged sand at 10-20 m off Saint-Gilles-les-Bains, between Hermitage and St Paul Bay.

Type material. Holotype and paratype 1 in MNHN, paratypes 2 to 20 coll. M. Jay; paratypes 21 to 30 coll. J. Drivas.

Etymology. Named after its shape, from Greek meaning needle-shaped.

Remarks. This species is easily dinstinguished from other species of Cerithiopsidae by its slender shape, and by its protoconch bearing 2 spiral keels. Species of the genus *Cerithiopsis* with a slender shape have a smooth protoconch. Species of the genus *Mendax* have an axially ribbed protoconch. Some species with a similar shape and similar teleoconch sculpture have been described by Laseron (1956) in the genus *Cerithiopsis*, and by Marshall (1978) in the genus *Laskeya*, but their protoconchs are very different. A protoconch with a similar sculpture has been illustrated by Marshall (1978) in the family Triphoridae (*Inella gigas*) but with a sinistral coiling. This species seems to have some variable characters: its colour ranging from blackish brown to golden brown; the size of its teleoconch beads, (either well rounded on some specimens or obsolete on other ones, the sculpture being thus reduced to a cancellate pattern); and its size, with specimens smaller and narrower though in their adult state; however all these specimens have identical protoconchs, and many intermediates exist between these variations.

Genus ***Koilofera*** n. gen.
Teleoconch pupiform with 2 beaded spiral cords per whorl as *Horologica*, but protoconch with a strong spiral swelling just above suture, and a strong concavity above this, without any other sculpture. Named from Greek meaning "bearing a concavity". Type species: *Koilofera koilofera* n.sp.

***Koilofera koilofera* n.sp.**

Plate 7, G; colour plate II, Fig. 56

Material examined. 2 spmns MNHN; 2 spmns coll. M. Jay; 1 spmn coll. J. Drivas; all with complete protoconch.

Description. Shell pupiform with strongly constricted base, the maximum width just under mid-height. Protoconch of 2.5 whorls, with a flat apex, delimited by a well marked angle; whorls of protoconch with a very strong rounded spiral swelling, situated just above lower suture, its upper part appearing very slightly beaded under oblique light on fresh specimens; whorl strongly concave above this swelling, without any other sculpture either axial or spiral; limit from teleoconch clear-cut and oblique, marked by change of colour and development of adult sculpture. Teleoconch of 6 slightly convex whorls, shallow suture. 2 spiral cords per whorl, crossed at right angles by fine axial ribs, with at each intersection a slightly axially elongate bead; beads numbering 17-18 per whorl. On the fourth and fifth whorls, beads become larger on the upper cord than on the lower one; on last whorl, these upper beads are more axially elongate, and partially incised in their middle by a spiral furrow, but are never quite divided on our specimens. Last whorl strongly constricted at base, with a third spiral cord, unbeaded, emerging from suture; a fourth unbeaded spiral cord on base. Aperture circular. Colour very dark brown to blackish-brown, protoconch distinctly paler.
Size: holotype total height 1.7 mm; maximum width 0.6 mm; height of protoconch 0.29 mm; width of protoconch at base 0.36 mm.

Type locality. Found dead in hand-dredged sand at 10-30 m, off Saint-Gilles-les-Bains, between harbour and Boucan-Canot beach.

Type material. Holotype and paratype 1 in MNHN; paratype 2 and 3 coll. M. Jay; paratype 4 coll. J. Drivas.

Etymology. Named for the shape of protoconch whorls, from Greek meaning "bearing a concavity".

Remarks. In its shape and colour, this species resembles *Dizoniopsis gothica* n.sp. but is easily separated from it by its protoconch. Some species with a more or less similar protoconch have been described by Marshall (1978) in the genus *Seila*, but these have a quite different adult sculpture.

Genus ***Seila*** A. Adams, 1861
Type species *Triphoris dextroversus* Adams & Reeve, 1860, China seas. Shell high and slender, teleoconch with 3 or more smooth spiral cords per whorl and fine close-set axial lamellae in their intervals. Protoconch smooth or axially ribbed.

***Seila bandorensis* (Melvill, 1893) .**
Plate 9, D; colour plate II, Fig. 57

Material examined. 1 spmn MNHN; 19 spmns coll. M. Jay; 5 spmns coll. J. Drivas.

Descripton. Shell elongate pyriform; base strongly constricted. Rounded protoconch of 1.5 smooth convex translucent whorls; limit from teleoconch ill-defined on 1/4 whorl, marked by development of the 3 spiral cords. Teleoconch whorls with 3 smooth spiral cords, equal in strength on last whorl, the median cord weaker on earlier whorls. Very fine lamellose axial threads in their intervals, well distinct under microscope. A fourth smooth, weaker spiral cord emerging from suture at base of last whorl, followed immediately below it by a fifth cord, and a sixth one at mid-height of base. Colour plain orange-brown, the 3 earlier whorls paler and whitish, protoconch white.
Size: maximum total height 3.8 mm; maximum width 1.2 mm; height of protoconch 0.30 mm; width of protoconch at base 0.33 mm.

Locality. Found dead in hand-dredged sand at 10-20 m, off Saint-Gilles-les-Bains.

Remarks. Our specimens were compared and found identical to the holotype of *Cerithiopsis* (*Seila*) *bandorensis* Melvill, 1893, type locality Bombay (NHM lot Nr. 1893.2.16.7).

***Seila hinduorum* (Melvill, 1898)**
Plate 9, E; colour plate II Fig. 58

Material examined. 1 spmn MNHN; 3 spmns coll. M. Jay; 2 spmns coll. J. Drivas.

Description. Shell conical, slightly fusiform, elongate, base not constricted. Protoconch of 3 smooth convex whorls; limit from teleoconch ill-defined on 1/4 whorl, marked by development of the 3 adult cords. Teleoconch up to 14 whorls, suture weakly impressed, whorls with 3 smooth spiral cords, subequal on the whole height of the shell. Fine very close-set lamellose axial threads in their intervals. A fourth much weaker spiral cord emerging from suture at base of last whorl. Base flat and smooth. Colour plain orange brown to golden brown; summit paler to white, protoconch white.
Size: total height 5.5 mm; maximum width 1.2 mm; height of protoconch 0.58 mm; width of protoconch at base 0.38 mm.

Locality. Found dead in hand-dredged sand at 40-50 m; off Saint-Gilles-les-Bains.

Remarks. Our specimens were compared and found identical to the specimens labelled syntypes of *Cerithiopsis (Seila) hinduorum* Melvill, 1898, type locality Karachi, in NMW (lot Nr Z.1955.158.00206), 18 specimens.

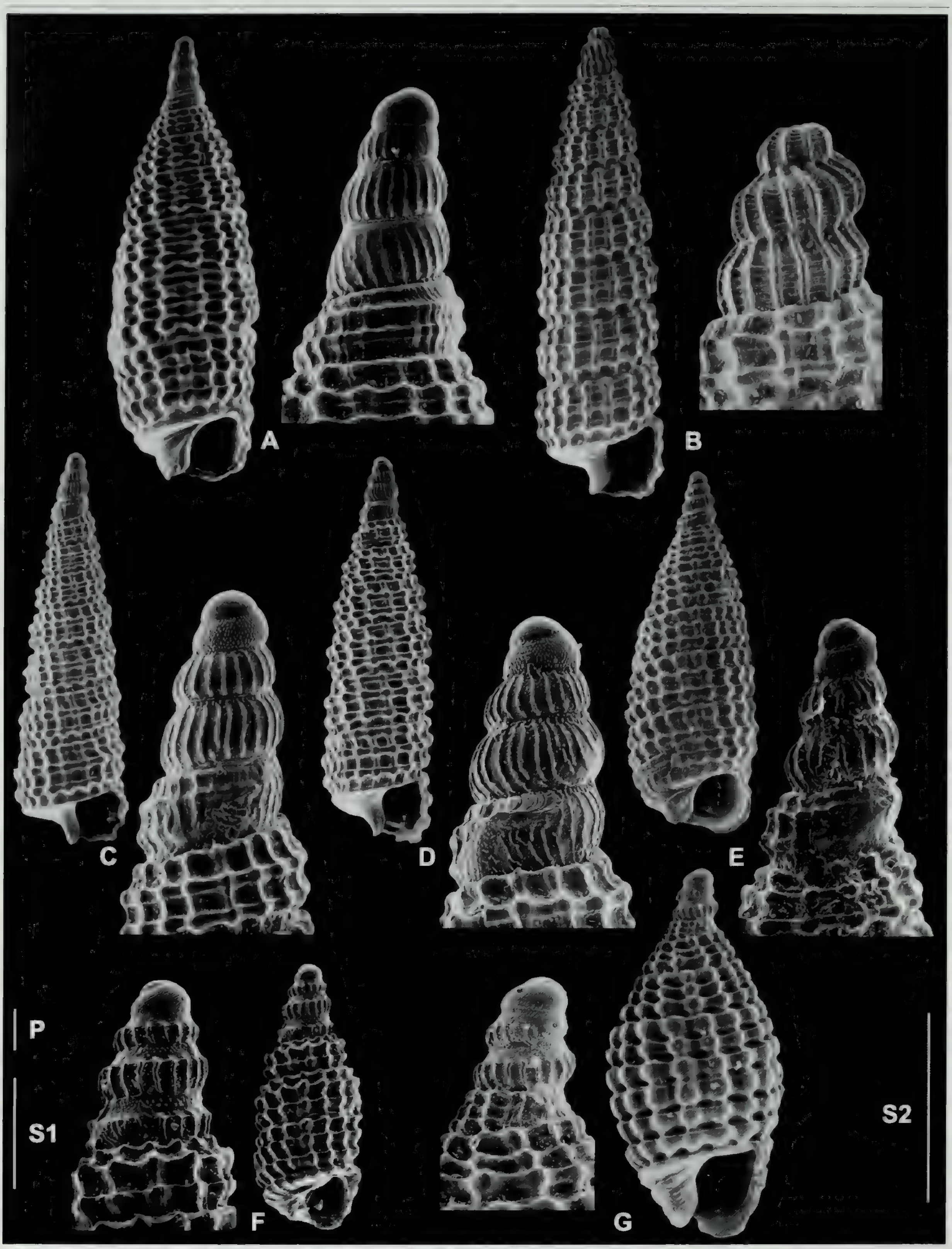

PLATE 8. Fig. A. *Mendax penneyi* n.sp. Off Saint Gilles les Bains, 10-20 m; holotype, height 4.1 mm; MNHN. **Fig. B.** *M. metivieri* n.sp. Off Saint Gilles les Bains, 30-50 m; holotype, height 4.3 mm; MNHN. **Fig. C.** *M. mascarenensis* n.sp. Off Saint Gilles les Bains, 30 m; holotype, height 4.2 m; MNHN. **Fig. D.** *M. ribesae* n.sp. Off Saint Gilles les Bains, 55 m; holotype, height 2.6 m; MNHN. **Fig. E.** *M. theodosiae* n.sp. Off Saint Gilles les Bains, 10-20 m; holotype, height 3.3mm; MNHN. **Fig. F.** *Prolixodens nicolayae* n.sp. Off Souris-Chaude, Trois-Bassins, 30 m; holotype, height 1.4 mm; MNHN. **Fig. G.** *P. sknips* n.sp. Off Saint Gilles les Bains, 10-30 m; holotype, height 1.8 mm; MNHN.
Scale bars: S (shells): 1 mm; P (protoconchs): 100 µm.

Seila chenui n.sp.

Plate 9, F; colour plate II, Fig. 59

Material examined. 2 spmns MNHN; 16 spmns (10 with complete protoconch) coll. M. Jay; 5 spmns coll. J. Drivas.

Description. Shell elongate conical slightly fusiform, base not constricted, protoconch a little more prominent than the general outline of teleoconch. Protoconch conical of 6 whorls, all of them since the first one bearing axial ribs, numbering 16 or 17 per whorl, strictly axial on earlier whorls, then more and more prosocline on following whorls; the 3 last whorls of protoconch bearing 3 very weak spiral cords in lower half of whorls, in the intervals between ribs; limit from teleoconch clear-cut, marked by change of colour and start of 2 adult cords. Teleoconch of 13 or 14 whorls with straight sides; the 5 earlier whorls with 2 spiral cords per whorl; a third spiral cord beginning at the sixth whorl, originating from a fine spiral thread in the interval between the 2 cords; a fourth cord beginning at the twelfth whorl, originating between the second and the third cord, but remaining obviously weaker up to the last whorl; 4 unequal cords on last whorls. All the cords prominent and bearing regularly spaced undulations, sometimes with a slight swelling. Suture marked by a fine spiral thread. Intervals between cords bearing very numerous close-set lamellose axial riblets, and a very fine spiral thread on last whorls. Last whorl with a fifth weaker cord, emerging from suture, followed immediately by a sixth cord; the remaining part of base smooth. Aperture quadrangular; anterior canal short and very oblique. Colour plain orange, protoconch a little more brownish.
Size: holotype total height 5.4 mm; width at base 2 mm. Height of protoconch 0.66 mm; maximum diameter of protoconch 0.40 mm.

Type locality. Found dead in hand-dredged sand at 10-20 m off Saint-Gilles-les-Bains, between Hermitage and Boucan-Canot beach.

Type material. Holotype and paratype 1 in MNHN, paratypes 2 to 11 coll. M. Jay; paratypes 12 to 16 coll. J. Drivas.

Etymology. Dedicated to Dr. J.C. Chenu, French conchologist in last century.

Remarks. This species resembles the following one (*Seila reunionensis* n.sp.) from which it is undistinguishable on teleoconch characters alone, but is easily separated from it by its protoconch of 6 whorls instead of 2.5. Other remarks will be discussed with the following species.

Seila reunionensis n.sp.

Plate 9, G; colour plate II, Fig. 60

Material examined. 2 spmns MNHN; 19 spmns (10 with complete protoconch) coll. M. Jay; 5 spmns coll. J. Drivas.

Description. Shell elongate conical, slightly fusiform, not constricted at base. Protoconch of 2.5 whorls, regularly tapering to apex; first whorl rather wide, the earlier 0.25 whorl smooth, the following ones with axial ribs extending from suture to suture, and 4 finer spiral cords in the lower half of their intervals; limit from teleoconch ill-defined on 1/4 whorl, marked by development of 2 spiral cords deforming axial ribs. Teleoconch of 11 whorls with straight sides, suture weakly impressed marked from earlier whorls onwards by a fine undulose spiral thread; 2 spiral cords per whorl on the 3 earlier whorls; then a third spiral cord arising at the end of fourth whorl, developing from a fine thread situated between the 2 cords, this third cord remaining weaker than the earlier two except on last whorl. At the beginning of the tenth whorl, a fine spiral thread emerges between the second and third cords, developing into a fourth cord, distinct on last whorl but remaining weaker than the three other ones. A fifth spiral cord, weaker than the fourth one, emerging from suture at base of last whorl, immediately followed by a sixth cord still a little weaker than the fifth one. All these spiral cords with wide undulations, sometimes with slight swelling. The intervals between cords with numerous close-set very fine lamellose axial riblets, and a fine spiral thread on last whorls. Base smooth. Aperture roundly quadrate, anterior canal wide and strongly oblique. Colour plain orange brown.
Size: maximum height 7.6 mm; width at base 1.9 mm; height of protoconch 0.56 mm; width of protoconch 0.43 mm.

Type locality. Found dead in hand-dredged sand at 10-20 m, off Saint-Gilles-les-Bains.

Type material. Holotype and paratype 1 in MNHN; paratypes 2 to 8 coll. M. Jay; paratypes 9 and 10 coll. J. Drivas.

Etymology. Named after Reunion island.

Remarks. This species resembles the preceeding one (*Seila chenui* n.sp.) in that its teleoconch bears spiral cords with distinct undulations, and differs from it only in its 2,5 protoconch whorls instead of 6. Both species are provisionally attributed to the genus *Seila*, though their spiral cords are undulose and occasionally slightly swollen. Some specimens resembling ours have sometimes been identified as *Seila laqueata* (Gould, 1861) (type locality China Seas) but Gould did not describe the protoconch of his species, and the figure given by Johnson shows a

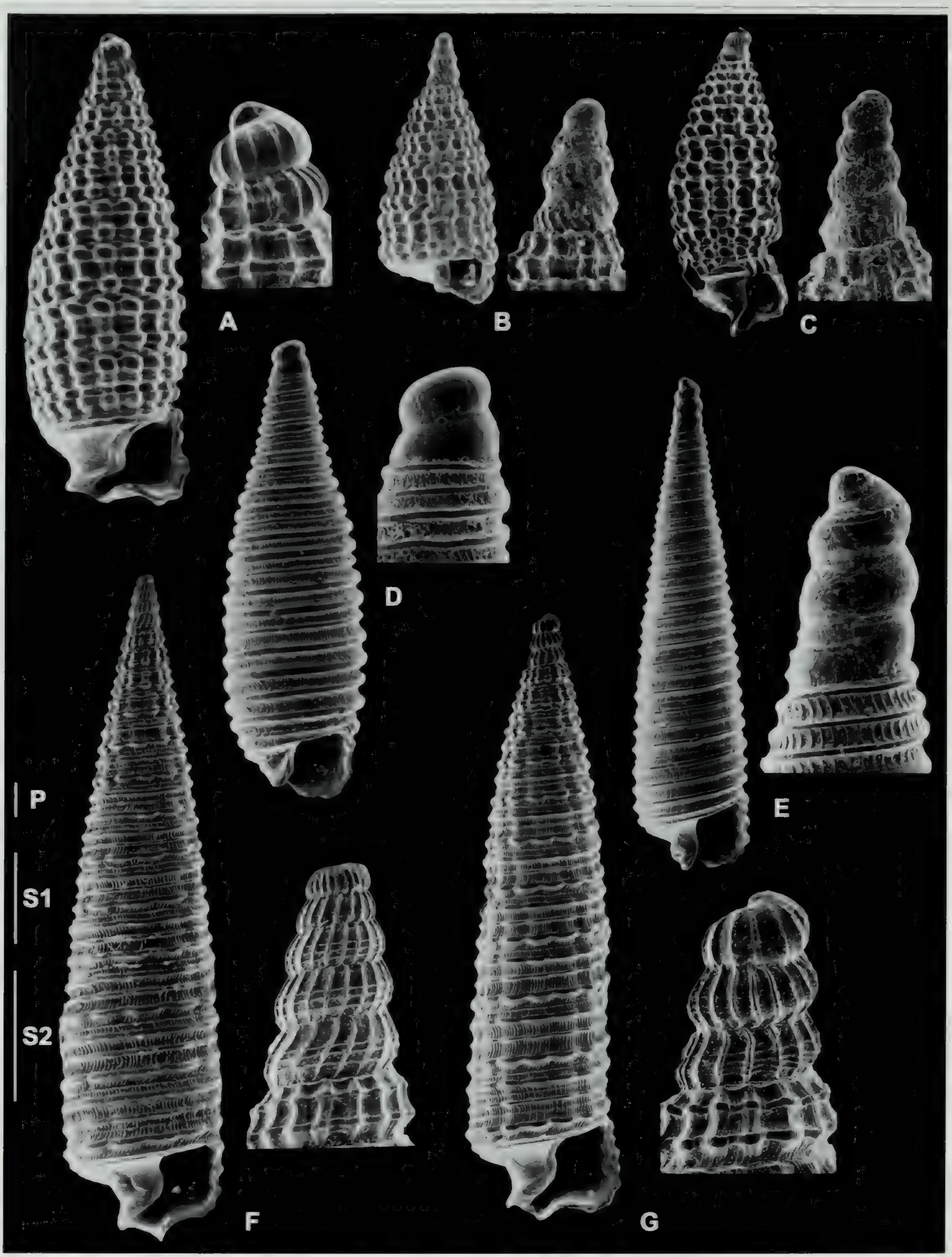

PLATE 9. Fig. A. *Dizoniopsis herosae* n.sp. Off Souris-Chaude, Trois-Bassins, 30 m; holotype, height 4.8 mm; MNHN. **Fig. B.** *D. herberti* n.sp. Off Saint Gilles les Bains, 10-20 m; holotype, height 2.4 mm; MNHN. **Fig C.** *D. gothica* n.sp. Off Saint Gilles les Bains, 10-20 m; holotype, height 2.7 mm; MNHN. **Fig. D.** *Seila bandorensis* (Melvill, 1892). Off Saint Gilles les Bains, 10-20 m; height 3.8 mm; MNHN. **Fig. E.** *S. hinduorum* (Melvill, 1898). Off Saint Gilles les Bains, 40-50 m; height 5,5 mm; MNHN. **Fig. F.** *S. chenui* n.sp. Off Saint Gilles les Bains, 10-20 m; holotype, height 5.4 mm; MNHN. **Fig G.** *S. reunionensis* n.sp. Off Saint Gilles les Bains, 30-50 m; holotype, height 7.6 mm; MNHN.
Scale bars: S (shells): 1 mm; P (protoconchs): 100 µm.

shell broken at both ends, bearing 3 spiral cords per whorl, unequal, smooth, neither undulose nor swollen. A lot labelled *Seila laqueata* (Gould, 1961) in NMW (lot N° Z.1955.158.02266 , 2 specimens from Hong-Kong) shows only 3 smooth spiral cords. Our new species differs from *Seila crocea* Angas, 1878 (type locality NSW, Australia), in its fourth spiral cord and the undulations on the cords; Angas did not describe the protoconch of his species. One specimen labelled *Seila crocea* in NMW (lot Z.1955.158.02267) shows four spiral cords on last whorl, but all of them are smooth without any undulation, and have a colour pattern with scattered white blotches, very different of our species. Our specimens were compared with *Seila cinctum* Dunker (MNK lot Nr 3237); *Seila capitata* Thiele, 1925 (type locality Agulhas bank) (MNK lot Nr 102723); *Seila alfredensis* Bartsch, 1915 (type locality Port Alfred, South Africa) (NMW, not material type); and *Seila dissimilis* Sutter, 1908, type locality New Zealand (NMW, not material type) but all these species differ from ours by their smooth spiral cords instead of regularly undulose or slightly swollen.

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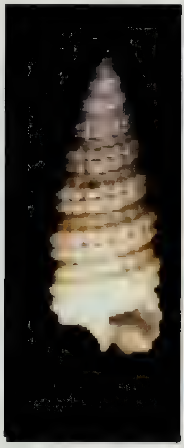
COLOUR PLATES

COLOUR PLATE 1

1. *Cerithiopsis eutrapela* Melvill & Standen, 1896. Off Saint Gilles les Bains,10-20 m; height 6.5; coll. M. Jay.
2. *C. fosterae* Melvill & Standen, 1896. Off Saint Gilles les Bains, 30-55m; height 6.1 mm; coll. M. Jay.
3. *C. boucheti* n.sp. Off Saint Gilles les Bains, 10-20 m; paratype 2, height 4.5 mm; coll. M. Jay.
4. *C. hadfieldi* n.sp. Off Saint Gilles les Bains, 45 m; paratype 2, height 5.6mm; coll. M. Jay.
5. *C. iochrous* n.sp. Off Saint Gilles les Bains, 10-20 m; paratype 2, height 5.5 mm; coll. M. Jay.
6. *C. jousseaumei* n.sp. Off Saint Gilles les Bains, 10-30 m; paratype 2, 6 mm, coll. M. Jay.
7. *C. lamyi* n.sp. Off Souris-Chaude, Trois-Bassins, 30 m; paratype 2, height 1.5 mm; coll. M. Jay.
8. *C. nutzeli* n.sp. Off Saint Gilles les Bains, 15-30 m; paratype 2, height 3.4 mm; coll. M.Jay.
9. *C. pickeringae* n.sp. Off Saint Gilles les Bains, 20-30 m; paratype 2, height 3.9 mm; coll. M. Jay.
10. *Cerithopsis seddonae* n.sp. Off Saint Gilles les Bains, 10-20 m; paratype 2, height 2.2 mm; coll. M. Jay.
11. *C. vaurisi* n.sp. Possession Bay, 55m; paratype 2, height 3.6 mm; coll. M. Jay.
12. *C. wayae* n.sp. Off Souris-Chaude, Trois-Bassins, 30 m; paratype 2, height 4.1 mm; coll. M. Jay.
13. *Joculator albocinctum* Melvill & Standen, 1896. Off Saint Gilles les Bains, 10-20 m, height 3 mm; coll. M. Jay.
14. *J. granata* Kay, 1979. Off Saint Gilles les Bains, 10-20 m; height 2.5 mm; coll. M. Jay.
15. *J. minima* Laseron, 1955. Off Saint Gilles les Bains, 10-20 m; height 2.3 mm; coll. M. Jay.
16. *J. minutissima* (Thiele, 1925). Off Saint Gilles les Bains and Possession Bay 10-54 m; height 1.5 mm; coll. M. Jay.
17. *J. pulvis* (Issel, 1869). Off Saint Gilles les Bains, 10-20 m; height 2.9 mm; coll. M. Jay.
18. *J. christiaensi* n.sp. Off Saint Gilles les Bains, 55 m; paratype 1, height 1.9 mm; coll. M. Jay.
19. *J. eudeli* n.sp. Off Saint Gilles les Bains, 30 m; paratype 2, height 1.9 mm; coll. M. Jay.
20. *J. fischeri* n.sp. Off Souris-Chaude, Trois-Bassins, 30 m; paratype 2, height 2.3 mm; coll. M. Jay.
21. *J. keratochroma* n.sp. Off Saint Gilles les Bains, 10-20 m; paratype 2, height 2.5 mm; coll. M. Jay.
22. *J. laseroni* n.sp. Off Boucan-Canot beach, Saint Gilles les Bains, 30 m; paratype 2, height 2.3 mm; coll. M. Jay.
23. *J. lozoueti* n.sp. Off Saint Gilles les Bains, 10-20 m; paratype 2, height 3.2 mm; coll. M. Jay.
24. *J. megacephala* n.sp. Off Saint Gilles les Bains, 10-20 m; paratype 2, height 1.8 mm; coll. M. Jay.
25. *J. melanoraphis* n.sp. Off Saint Gilles les Bains, 10-30 m; paratype 2, height 2.9 mm; coll. M. Jay.
26. *J. mygaki* n.sp. Off Boucan-Canot beach, Saint Gilles les Bains, 30 m; paratype 2, height 1.9 mm; coll. M. Jay.
27. *J. myia* n.sp. Off Boucan-Canot beach, Saint Gilles les Bains, 30 m; paratype 2, height 2.2 mm; coll. M. Jay.
28. *J. phtyr* n.sp. Off Saint Gilles les Bains, 35 m; paratype 2, height 2 mm; coll. M. Jay.
29. *J. psyllos* n.sp. Off Saint Gilles les Bains, 10-20 m; paratype 2, height 2 mm; coll. M. Jay.
30. *J. salvati* n.sp. Off Boucan-Canot beach, Saint Gilles les Bains, 35 m; paratype 1, height 3.6 mm; coll. M. Jay.
31. *J. skolix* n.sp. Off Boucan-Canot beach, Saint Gilles les Bains, 35 m; paratype 2, height 3.2 mm; coll. M. Jay.
32. *J. thielei* n.sp. Off Saint Gilles les Bains, 10-20 m; paratype 2, height 1.5 mm;
coll. M. Jay.
33. *J. vignali* n.sp. Off Souris-Chaude, Trois-Bassins, 30 m; paratype 1, height 1.4 mm; coll. M. Jay.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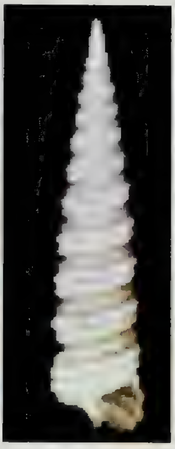
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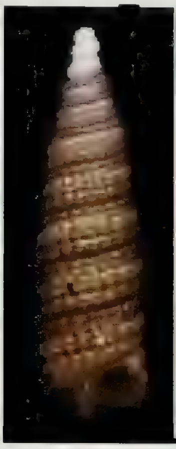
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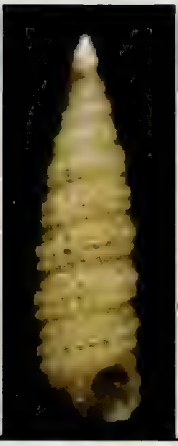
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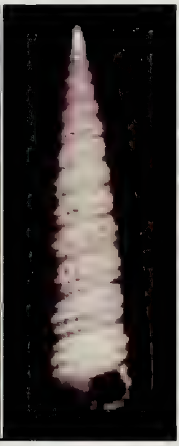
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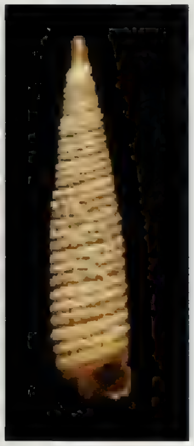
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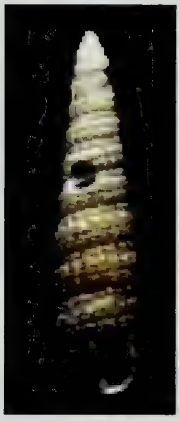
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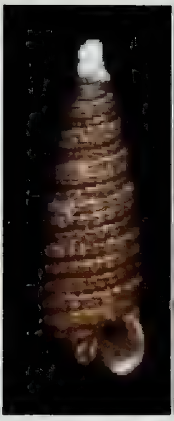
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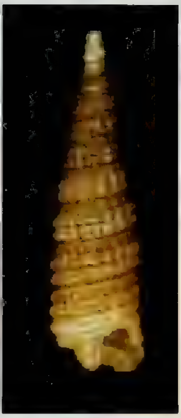
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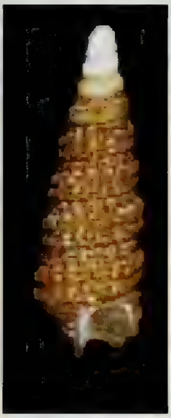
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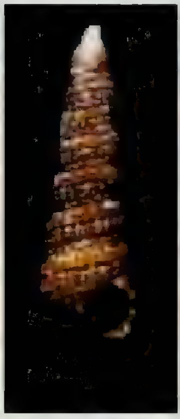
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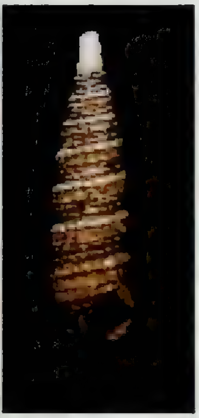
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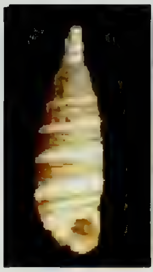
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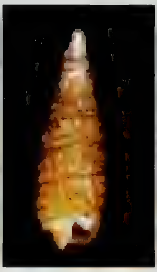
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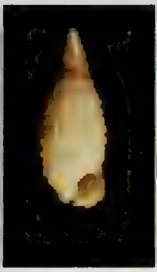
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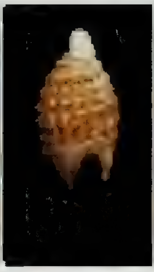
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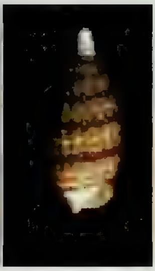
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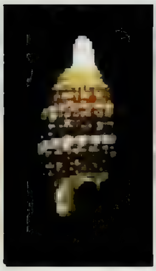
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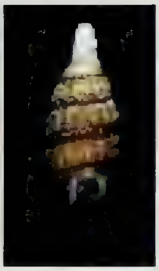
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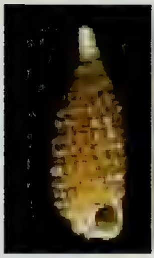
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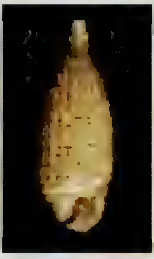
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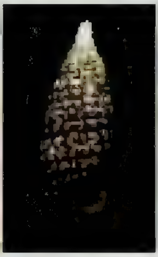
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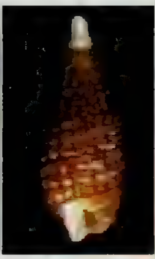
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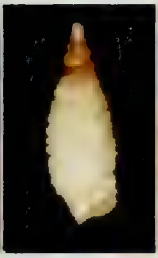
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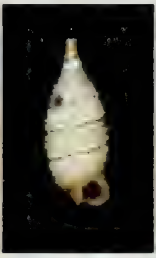
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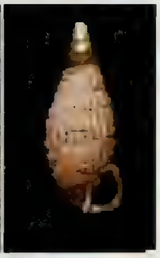
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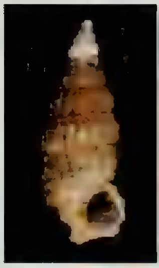
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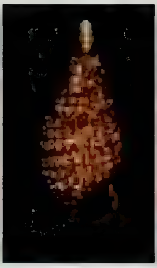
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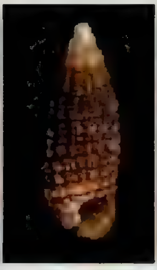
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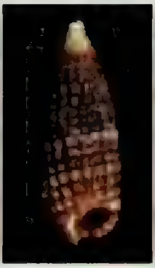
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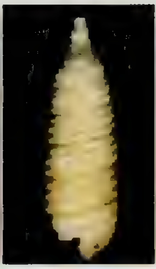
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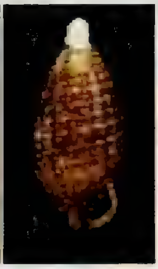
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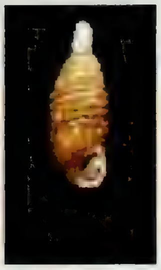
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COLOUR PLATE 2

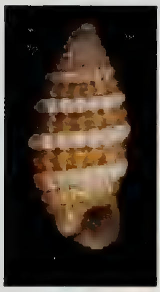
34. *Horologica balteata* (Watson, 1886). Off Saint Gilles les Bains, 12m; height 3 mm; coll. M. Jay.
35. *H. bicolor* Laseron,1956. Off Saint Gilles les Bains, 30 m; height 2.1 mm; coll. M. Jay.
36. *H. macrocephala* Laseron, 1956. Off Saint Gilles les Bains, 20-30 m; height 1.7 mm; coll. M. Jay.
37. *H. minareta* Laseron, 1956. Off Saint Gilles les Bains, 10-20 m; height 2.6 mm; coll. M. Jay.
38. *H. purpurea* Laseron, 1955. Off Cape La Houssaye, Saint Gilles les Bains, 10-20 m; height 3.1 mm; coll. M. Jay.
39. *H. cf semipicta* (Gould, 1861). Off Saint Gilles les Bains, 30 m; height 2.1 mm; coll. M. Jay.
40. *H. turrigera* (Watson, 1886). Off Saint Gilles les Bains, 10-20 m; height 3.7 mm; coll. M. Jay.
41. *H. anisocorda* n.sp. Off Saint Gilles les Bains, 30m; paratype 2, height 2.2 mm; coll. M. Jay.
42. *H. glaubrechti* n.sp. Off Saint Gilles les Bains, 30-50 m; paratype 2, height 2.3 mm; coll. M. Jay.
43. *H. konops* n.sp. Off Boucan-Canot beach, Saint Gilles les Bains, 30 m; paratype 2, height 3mm; coll. M. Jay.
44. *H. martini* n.sp. Off Boucan-Canot beach, Saint Gilles les Bains, 30 m; paratype 2, height 2.7 mm; coll. M. Jay,.
45. *Dizoniopsis gothica* n.sp. Off Saint Gilles les Bains, 10-20 m; paratype 2, height 2.7 mm; coll. M. Jay.
46. *D. herberti* n.sp. Off Saint Gilles les Bains, 10-20 m; paratype 2, height 2.4 mm; coll. M. Jay.
47. *D. herosae* n.sp. Off Souris-Chaude, Trois-Bassins, 30 m; paratype 2, height 4.8 mm; coll. M. Jay.
48. *Mendax mascarenensis* n.sp. Off Saint Gilles les Bains, 30 m; paratype 2, height 4.2 m; coll. M. Jay.
49. *M. metivieri* n.sp. Off Saint Gilles les Bains, 30-50 m; paratype 2, height 4.3 mm; coll. M. Jay.
50. *M. penneyi* n.sp. Off Saint Gilles les Bains, 10-20 m; paratype 1, height 4.1 mm; coll. M. Jay.
51. *M. ribesae* n.sp. Off Saint Gilles les Bains, 55 m; paratype 2, height 2.6 m; coll. M. Jay.
52. *M. theodosiae* n.sp. Off Saint Gilles les Bains, 10-20 m; paratype 2, height 3.3mm; coll. M. Jay.

53. *Prolixodens nicolayae* n.sp. Off Souris-Chaude, Trois-Bassins, 30 m; paratype 2, height 1.4 mm; coll. M. Jay.
54. *P. sknips* n.sp. Off Saint Gilles les Bains, 10-30 m; paratype 2, height 1.8 mm; coll. M. Jay,

55. *Belonimorphis belonimorphis* n.p. Off Saint Gilles les Bains, 10-30 m; paratype 2, height 6 mm; coll. M. Jay.

56. *Koilofera koilofera* n.sp. Off Saint Gilles les Bains, 10-30 m; paratype 2, height 2.7 mm; coll. M. Jay.

57. *Seila bandorensis* (Melvill, 1892). Off Saint Gilles les Bains, 10-20 m; height 3.8 mm; coll. M. Jay,
58. *S. hinduorum* (Melvill, 1898). Off Saint Gilles les Bains, 40-50 m; height 5,5 mm; coll. M. Jay.
59. *S. chenui* n.sp. Off Saint Gilles les Bains, 10-20 m; paratype 2, height 5.4 mm; coll. M. Jay.
60. *S. reunionensis* n.sp. Off Saint Gilles les Bains, 30-50 m; paratype 2, height 7.6 mm; coll. M. Jay.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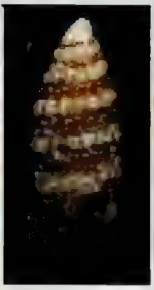
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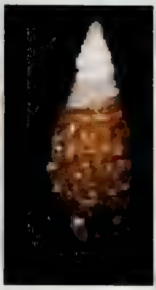
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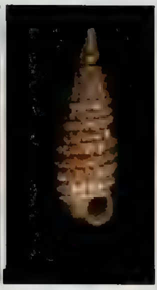
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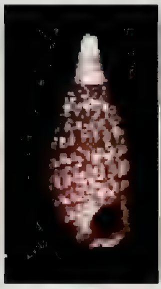
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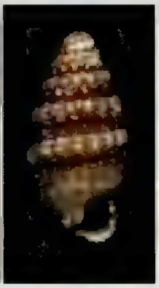
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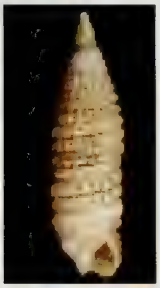
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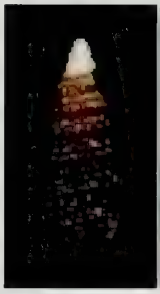
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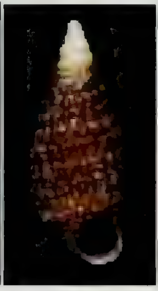
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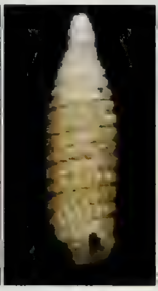
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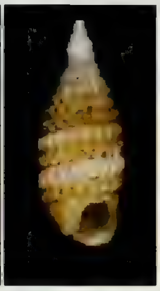
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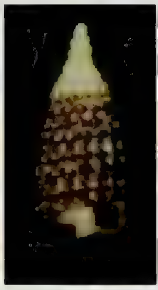
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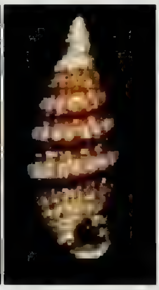
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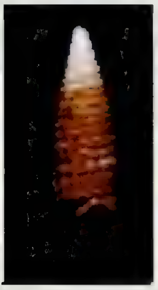
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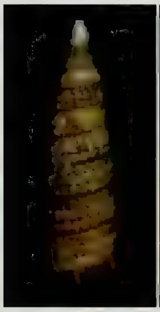
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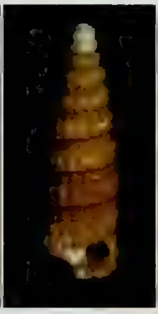
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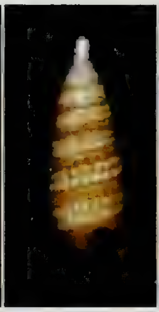
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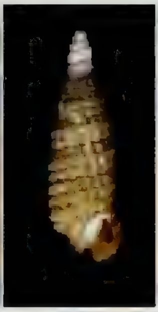
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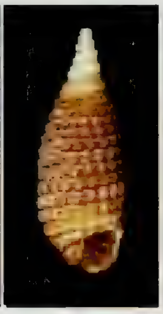
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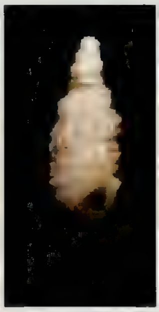
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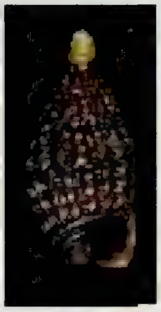
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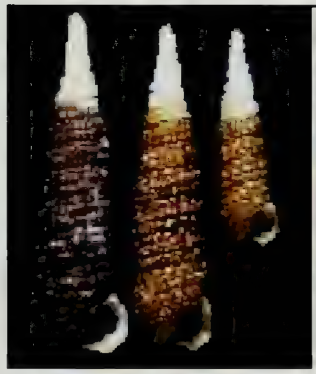
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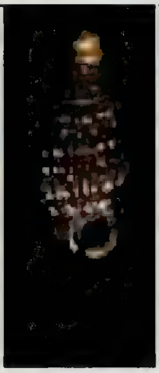
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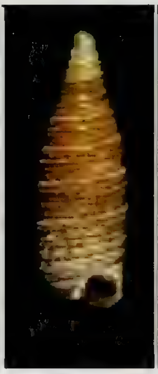
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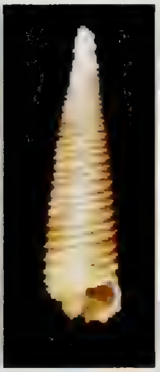
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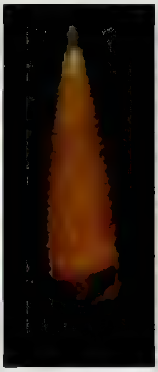
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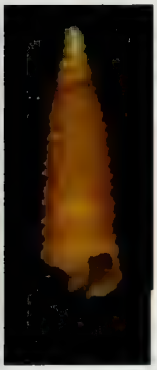
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Description d'une nouvelle espèce de mitre des Philippines (Sous-famille des Imbricariinae) (Gastropoda:Prosobranchia:Mitridae)

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MOTS CLES. Gastropoda, Mitridae, Imbricariinae, *Scabricola (Scabricola)*, nouvelle espèce, Philippines.

KEYWORDS. Gastropoda, Mitridae, Imbricariinae, *Scabricola (Scabricola)*, new species, Philippine Islands.

RESUME. *Scabricola (Scabricola) lavoisieri* n. sp. est décrite des Philippines et comparée avec *S.(S.) potensis* (Montrouzier, 1858) de Nouvelle-Calédonie.

ABSTRACT. *Scabricola (Scabricola) lavoisieri* n. sp. is described from the Philippine Islands. It is compared with *S. (S.) potensis* (Montrouzier, 1858) from New Caledonia.

INTRODUCTION.

Dans la sous-famille des Imbricariinae, le genre *Scabricola (Scabricola)* était représenté par 10 espèces (Cernohorsky 1991) : *S. variegata* (Gmelin, 1791), *S. desetangsii* (Kiener, 1838), *S. potensis* (Montrouzier, 1858), *S. caerula* (Reeve, 1844), *S. vicdani* Cernohorski, 1981, *S. eximia* (A. Adams, 1853), *S. coriacea* (Reeve, 1845), *S. padangensis* (Thiele, 1925), *S. alabaster* (Sowerby, 1900). Une espèce a été récemment décrite: *S. condei* Guillot de Suduiraut, 2001. Avec la description de *S. (S.) lavoisieri* n. sp. le nombre d' espèces appartenant à *Scabricola (Scabricola)* connues à ce jour est de 11.

ETUDE SYSTEMATIQUE

Famille **MITRIDAE** Swainson, 1831
Sous-famile **IMBRICARIINAE** Troschel, 1867
Espèce type : *Voluta variegata* Gmelin, 1791

Scabricola (Scabricola) lavoisieri n. sp.

Figs 1-5

Materiel type. Holotype Muséum national d'Histoire naturelle, Paris, France; paratype 1 : coll. de l'auteur; paratype 2 : coll. R. Salisbury; paratype 3: coll. A. Deynzer.

Localité type. Philippines, au sud de l'Ile de Balicasag, Panglao-Bohol, au filet, 140 – 180 m, sur fond de sable.

Description. Coquille de petite taille pour le genre. Protoconque inconnue. Tours de spire fusiformes, légèrement convexes; dernier tour cylindrique. Sutures peu profondes. Epaulement crénelé. Les deux avant-derniers tours portant cinq cordons spiraux arrondis, interspaces striés axialement. Dernier tour portant 17 ou 18 cordons spiraux. Base de l'ouverture plus ovoïde, sa hauteur représente 47% de la hauteur de la téléoconque. Lèvre exterieure ondulée. Fasciole siphonale droite,distincte, orné de quatre plis columellaires. Couleur blanche, maculée irrégulièrement d'une bande jaune-orange au-dessus des sutures. Dernier tour portant une large bande de même couleur au-dessus de l'angle parietal, avec des taches blanches sur le cordons spiraux. Ouverture blanc-crème, periostracum transparent.

Discussion. *Scabricola (Scabricola) lavoisieri* n. sp. diffère de *S. potensis* (Montrouzier, 1858) par sa spire plus fusiforme, son avant-dernier tour portant 5 cordons spiraux, le dernier tour 17 ou 18 au lieu de 6 ou 7 cordons sur l'avant dernier tour et 30 à 40 sur le dernier tour chez *S. (S.) potensis*. *S. lavoisieri* diffère également par la hauteur de son ouverture (47 % de la hauteur de sa téléoconque au lieu de 67 % chez *S. potensis)*, par sa couleur blanche, par le nombre de ses plis columellaires (4 au lieu de 6 ou 7 chez *S. potensis)* .

Dimensions

Holotype : 16, 7 x 6, 5 mm ; hauteur de l'ouverture: 8, 4 mm.
Paratype 1: 13, 2 x 5, 3 mm; hauteur de l'ouverture: 7, 3 mm.
Paratype 2: 12, 7 x 5, 3 mm; hauteur de l'ouverture: 6, 2 mm.
Paratype 3: 15, 2 x 5, 6 mm; hauteur de l'ouverture: 7, 9 mm.

Etymologie. Cette nouvelle espèce est nommée en mémoire de Antoine Laurent de Lavoisier (1743 – 1794), père de la chimie moderne et aïeul de l'auteur.

REMERCIEMENTS.

Je suis particulièrement reconnaissant à Virginie Héros, à Pierre Lozouet Muséum national d'Histoire naturelle, Paris pour le cliché de l' holotype de *Mitra potensis*, à R. Houart (Landen, Belgium) pour ses commentaires et corrections du manuscrit et à G. Poppe (Bruxelles, Belgium) pour la mise en page de la planche.

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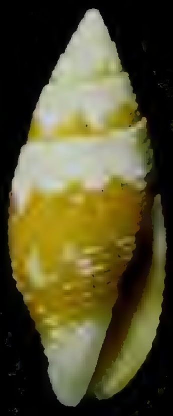
Guillot de Suduiraut, E. 2001. Description de *Scabricola (Scabricola) condei* n. sp. (Gastropoda: Prosobranchia : Mitridae) des Philippines. *Novapex* 2 (1) : 21-23.

1-5. *Scabricola (Scabricola) lavoisieri* n. sp. Philippines, Ile de Balicasag, Panglao-Bohol, 140-180 m.

1-2 Holotype MNHN: 16,7 mm x 6,5 mm; hauteur de l'ouverture: 8,4 mm.
3. Paratype collection de l'auteur: 13,2 mm x 5,3 mm; hauteur de l'ouverture: 7,3 mm.
4. Paratype collection R. Salisbury: 12,7 mm x 5,3 mm; hauteur de l'ouverture: 6,2 mm.
5. Paratype collection A. Deynzer: 15,2 mm x 5,6 mm; hauteur de l'ouverture: 7,9 mm.
6-7. *Scabricola (Scabricola) potensis* (Montrouzier, 1858): 24,5 mm x 11,4 mm; hauteur de l'ouverture: 16,5 mm. Ile de Pot, Nouvelle-Calédonie. Holotype MNHN.



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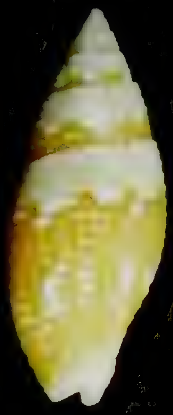

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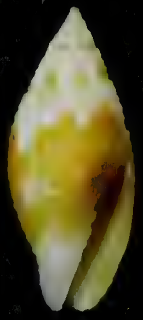

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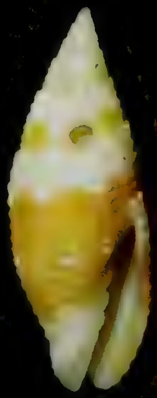

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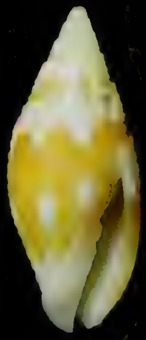

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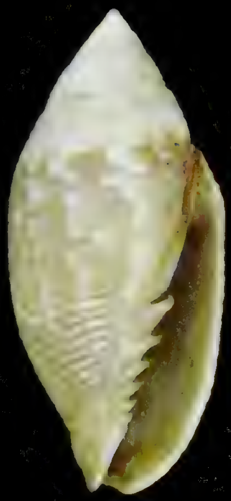

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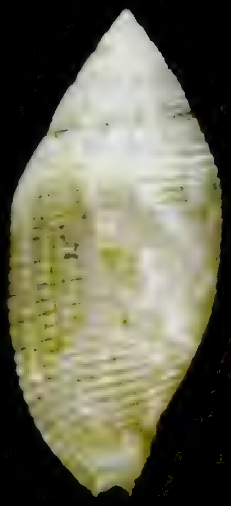

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Description of a new volute (Gastropoda: Volutidae) from southern Madagascar

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KEYWORDS. Gastropoda, Volutidae, *Lyria (Indolyria) pauljohnsoni* sp. nov., Madagascar.

ABSTRACT. *Lyria (Indolyria) pauljohnsoni* sp. nov., from Madagascar, is hereby described and compared with its closest relatives *Lyria (Indolyria) brianoi* Poppe, 1999 and *Lyria (Indolyria) patbaili* Bouchet, 1999.

RESUME. *Lyria (Indolyria) pauljohnsoni* sp. nov. de Madagascar, est décrite et comparée avec les espèces proches, *Lyria (Indolyria) brianoi* Poppe, 1999 et *Lyria (Indolyria) patbaili* Bouchet, 1999.

INTRODUCTION

Two years after the description of *Lyria (Indolyria) brianoi* and *L. (I.) patbaili*, fishermen from Fort Dauphin, Madagascar, discovered a third species of *Indolyria* living in the waters of southern Madagascar. The new species definitely belongs to the subgenus *Indolyria* and is very closely related to *L. (I.) brianoi.*

SYSTEMATICS

Class **GASTROPODA**

Family **VOLUTIDAE** Rafinesque, 1815
Subfamily **VOLUTINAE** Rafinesque, 1815
Tribe **LYRIINI** Pilsbry & Olsson, 1954

Genus ***Lyria*** Gray, 1847
Type species: *Lyria nucleus* (Lamarck, 1811)
Subgenus ***Indolyria*** Bail & Poppe, 2001
Type species: *Lyria (I.) lyraeformis* (Swainson, 1821)

Lyria (Indolyria) pauljohnsoni sp. nov.
Figs 1-6

Type Material. Holotype MNHN, Paris. Length: 37.3 mm. Maximum width: 17.1 mm. ex coll. P. Johnson, Great Brittain.
Paratype 1 Coll. G. T. Poppe. Length: 35.5 mm. Maximum width: 17.5 mm. Animal and operculum dried inside.
Paratype 2 Coll. J. Conde. Length: 32.5 mm. Maximum width: 16.1 mm. Animal and operculum dried inside.

Type Locality. Madagascar, Fort Dauphin area.

Range. Only known from the type locality.

Habitat. Unknown.

Description. The shell has an ovate, elongate shape and is thick and solid. The spire is very small and covers less than a third of the shell length. The protoconch is broad and has about 2 whorls and presents in fresh specimens a silky gloss. The transition into the teleoconch is gradual and only visible due to the occurrence of faint axial plicae. The holotype has a protoconch of 3.2 mm at its base. This is very large compared to the total shell width. The teleoconch consists of 4.5 flattened whorls. On the first teleoconch whorl, just behind the protoconch, there appear a few faint axial ribs which rapidly become very weak and irregular on the next whorl. The overall appearance of the body whorl is smooth. On the back of the last whorl, situated close to the siphonal canal, all three type specimens show 7-9 hardly discernible spiral grooves. The outer lip is thickened all along the peristome and flares at its lower half. The parietal path bears several plicae of which 3, situated near the siphonal canal are very strong. On the posterior end of the aperture, there is a channel, which is about 1.2 mm in width and 5 mm in length. The suture is deep, almost channelled. The outer surface has a silky gloss and the interior of the aperture is very glossy. The parietal callus is thick for the genus and covers the fasciole. The colour pattern is complex: the protoconch whorls are light brown with a tinge of purple, the teleoconch whorls have a purple-brown base colour with 3 spiral bands of interrupted cream and black blotches. Below these spiral bands there is another, parallel, spiral band, in which the black blotches are mirrored by cream blotches. This is especially visible in the holotype. Both the paratypes are not so dark coloured: the shells are cream-chocolate and the spiral bands are less obvious. On the thickening along the peristome appear 7-9, very dark coloured spiral lines. They become very prominent and continue on the thickened outer lip and form brown spots on the inside of the lip. The outside of the siphonal canal is darker coloured than the rest of the shell.

Animal and radula. Unknown. Animal dried inside in both paratypes. Operculum present, about 10 mm in length.

Differential diagnosis. *L.* (*I.*) *pauljohnsoni* differs from *L.* (*I.*) *brianoi* at first glance by the presence of an obvious much larger channel on the posterior side of the aperture. *L.* (*I.*) *brianoi* has distinct axial ribs while the shell is smooth in *L.* (*I.*) *pauljohnsoni.* The number of plicae on the parietal shield is much larger and more obvious *in L. (I.) brianoi.* While L. (I.) brianoi most often has an orange-brown colour, *L. (I.) pauljohnsoni* is much more chocolate with a pinkish shine. The spire in the latter species is much smaller compared to the total shell length.
L. (*I.*) *patbaili* is, in general, twice as large as an average *L.* (*I.*) *pauljohnsoni*, it has only a faint channel on the posterior end of the aperture, is axially ribbed, has a different colour pattern and a much longer spire.

Remarks. This new species, at present known from the type material and one very beach-worn shell, belongs to the subgenus *Indolyria*, which is characterised by thick shells with a very large protoconch. This subgenus is limited to the Indian Ocean.

Derivatio nominis. The shell is named in honour of Paul Johnson, Great Britain, active volute-collector who donated the holotype to the MNHN, Paris.

ACKNOWLEDGEMENTS

We thank Michel Charles for providing us the paratypes, Javier Conde for critically rereading and commenting the manuscript.

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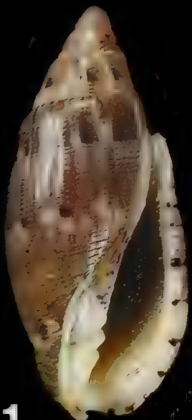
1-6. *Lyria* (*Indolyria*) *pauljohnsoni* Poppe & Terryn, sp. nov.

1-3. Holotype MNHN, Madagascar, Fort Dauphin area. 37.3 mm.
4-5. Paratype 1, coll. G.T. Poppe. 35.5 mm.
6. Paratype 2, coll. J. Conde: 32.5 mm.

7-8: *Lyria* (*Indolyria*) *brianoi* Poppe, 1999. Madagascar, Fort Dauphin area, 80-150 m.
7. 31.2 mm. 8. 28.1 mm.

9. *Lyria* (*Indolyria*) *patbaili* Bouchet, 1999. Madagascar, Fort Dauphin area, 80-150 m, 65.1 mm.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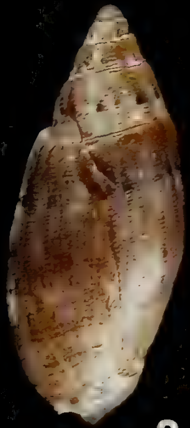
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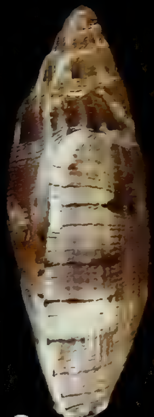
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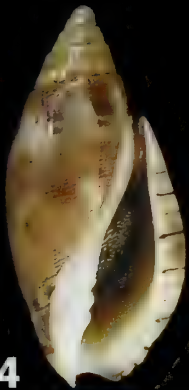
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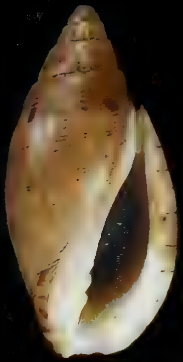
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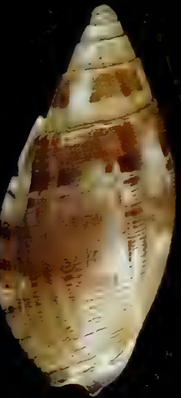
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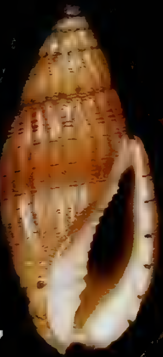
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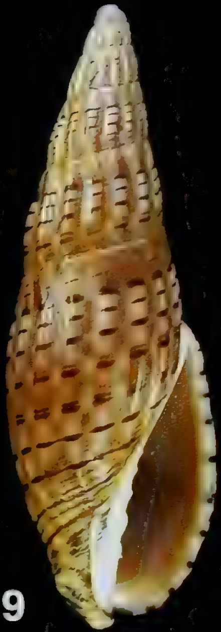
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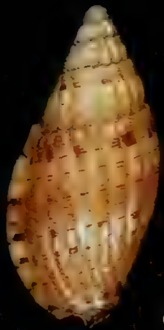
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Powell, A.W.B. 1979. *New Zealand Mollusca. Marine, land and freshwater shells.* William Collins Publishers Ltd: xiv + 500 pp.
Mayr, E. 1989. Attaching names to objects. In: *What the philosophy of biology is : essays for David Hull* (M. Ruse, ed.), Klumer Academic, Dordrecht: 235-243.

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References, in alphabetic order, should be given in the following form (titles of journals should not be abbreviated):

Keen, A.M. & Campbell, G.B. 1964. Ten new species of Typhinae (Gastropoda : Muricidae). *TheVeliger* 7(I): 46-57.
Powell, A.W.B. 1979. *New Zealand Mollusca. Marine, land and freshwater shells.* William Collins Publishers Ltd: xiv + 500 pp.
Mayr, E. 1989. Attaching names to objects. In: *What the philosophy of biology is : essays for David Hull* (M. Ruse, ed.), Klumer Academic, Dordrecht: 235-243.

Illustrations. Photographs must be of a high quality (colour or black/white), printed on glossy paper in a final version (max. 16 X 21 cm), adequatly mounted. Colour work can be submitted for black & white production. The illustrations may be submitted as digital files (CD-ROM, ZIP) in BMP, JPG or TIFF format, with mention of the program. They must be adequately mounted with not any other text than the numbering. A printed version of the plates must be imperatively sent together with the manuscript. Inclusion of colour plates has to be approved by the board who will take the final decision. Authors who want to include colour plates are invited to ask for possibilities and charges.

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Manuscripts, corrected proofs and any mail are to be sent to:
Société Belge de Malacologie, Mr. R. Houart, B.P. 3, B-1370 Jodoigne, Belgium.

Vie de la Société – Life of the Society

(suite)

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VIE DE LA SOCIETE LIFE OF THE SOCIETY

L'exposition 2002 de la SBM
ou
Promenade au pays des malacologues de la SBM

Claude VILVENS et
Christiane DELONGUEVILLE, Ralph DUCHAMPS, Koen FRAUSSEN, Roland HOUART, Annie LANGLEIT, Jeannine et René MASSON, Etienne MEULEMAN, Roland SCAILLET, Rita SENDERS et Edgar WAIENGNIER

Cette tradition bien ancrée dans l'esprit des membres de la SBM a une fois de plus été respectée : la première réunion de l'année 2002 a été consacrée à l'Exposition (avec un 'E' majuscule). Pour rappel, l'idée est d'inviter les membres à présenter un thème malacologique, qu'il fasse partie de leurs préoccupations habituelles ou, au contraire, qu'il appartienne à un domaine dans lequel on n'est pas habitué à les voir évoluer. Le public visé ? Tout qui est intéressé par les coquilles, bien sûr !

La cuvée 2002 pourrait être qualifiée de variée et diversifiée. Si certains ont présenté un sujet somme toute assez habituel pour eux (Roland, Claude, Etienne, Annie, Koen, …), d'autres se sont aventurés dans des terrains où l'on ne les attendait pas (Ralph, Jeanine et René, Fernand et Rika, …). Cela donnait une formidable promenade au pays des Mollusques dont les pages suivantes vont tenter de vous rendre compte. Suivez les guides !

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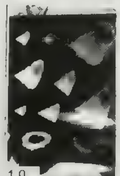
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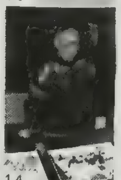
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Précisons encore que les auteurs cités ci-dessus ont rédigé personnellement, avec brio, l'article présentant leur thème d'exposition. Doublement merci à eux ☺ !

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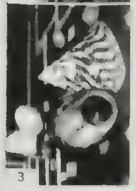
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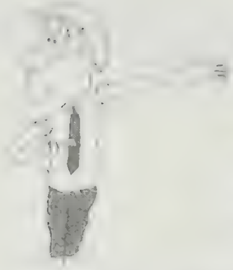
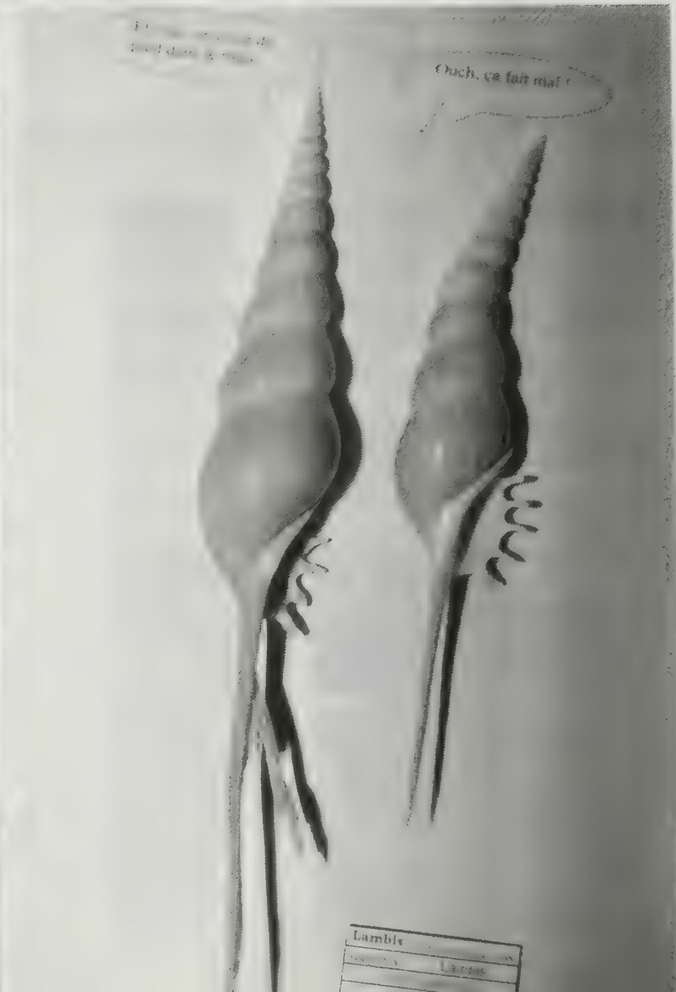


1. Etienne Meuleman : « Freak » spécimens chez Strombidae

Il arrive de trouver des coquilles qui diffèrent légèrement de la forme normale de l'espèce à laquelle ils appartiennent. En effet, une cicatrice peut apparaître suite à une blessure du manteau. Une maladie ou une carence alimentaire peut également engendrer une déformation de la coquille qui lui donne parfois une forme bizarroïde. De telles déformations se présentent régulièrement chez les *Lambis*. Certains *Strombus* et *Tibia* présentent parfois des formes spéciales.

Sur la table d'exposition, on pouvait découvrir, quelques spécimens tels *Lambis lambis* (Linné, 1758), *Strombus urceus urceus ustulatus* Schumacher, 1817 ou *Tibia fusus* (Linné, 1758). Ces coquilles aux formes étranges ont parfois été nommées sous un autre nom en pensant qu'il s'agissait d'une nouvelle espèce.

« Freak » spécimens
chez Strombidae



2. Koen Fraussen : Le genre *Beringius* Dall, 1877 (Buccinidae)

Dans cette grande famille des Buccinidae, le genre *Beringius* Dall, 1877 est un des plus célèbres. Tout comme chez *Ancistrolepis* Dall, 1895, *Parancistrolepis* Azuma, 1965, *Clinopegma* Grant & Gale, 1931 et surtout *Neptunea* Bolten in Röding, 1798, les coquilles de *Beringius* sont grandes et belles, garnies d'une sculpture souvent très prononcée. La variabilité est étonnante et c'est un plaisir de collectionner les diverses formes des espèces communes. C'est aussi une plaisir bien sûr d'essayer d'obtenir les espèces très rares.

Les descriptions présentées par Habe & Ito, 1965 des genres *Neoberingius* (espèce type: *Beringius frielei* Dall, 1895) et *Beringion* (espèce type: *Beringius marshalli* Dall, 1919) ne sont pas très claires. Pour écarter ce problème j'ai choisi d'utiliser ici le nom générique *Beringius* sensu stricto. Golikov & Starobogatov (1975) ont décrit la famille des Beringiidae et l'ordre des Beringioidea (pour contenir les Beringiidae et les Anachidae). Dix espèces actuelles sont connues, avec bien sûr un nombre de formes et de synonymes. Plus de 15 espèces fossiles (Cenozoïque Supérieur, Eocène, Miocène, Pliocène) sont déja décrites dans le genre *Beringius*, et 2 fossiles du Miocène dans le genre *Tyrannoberingius* (espèce type, attention, ne tombez pas à la renverse: *Tyrannoberingius rex* Marincovich, 1981).

Beringius aleuticus
Beringius crebicostatus
Nr. 3157
rdami

Neuf espèces, 1 sous-espèce et plusieurs formes ont été exposées, toutes actuelles, listées ici par ordre de rareté :

Beringius turtoni (Bean, 1834) (Ocean Atlantique boréal-arctique) avec 4 formes: f. *ossiania* Friele, 1879; f. *attenuata* Simpson in Marshall, 1902; f. *minor* Harmer, 1914 et la forme grande et large d' Islande.

Beringius beringii (Middendorff, 1848) (Océan Pacifique Arctique et la Mer de Bering) avec plusieurs formes: grandes et petites, lisses ou fortement spiralées, fragiles ou très lourdes, et ce qu'on appelle généralement la forme *indentatus* Dall, 1919 et *kobelti* Dall, 1902.

Beringius polynematicus Pilsbry, 1907 (Japon et Kamtchatka), avec periostracum jaune ou brun foncé. Cette espèce est souvent présentée dans la litterature et dans les listes d'échange sous le nom de *B. marshalli* Dall, 1919.

Beringius frielei Dall, 1894 (Mer de Bering occidentale). Un exemplaire d'eau profonde avec une coquille âbimée par l'acidité de l'eau de mer dans ces grandes profondeurs était également exposé.

Beringius frielei miyauchii Habe & Ito, 1972 (Mer de Okhotsk). Représenté à l'exposition par des exemplaires fragiles ou robustes.

Beringius stimpsoni (Gould, 1860) (Alaska).

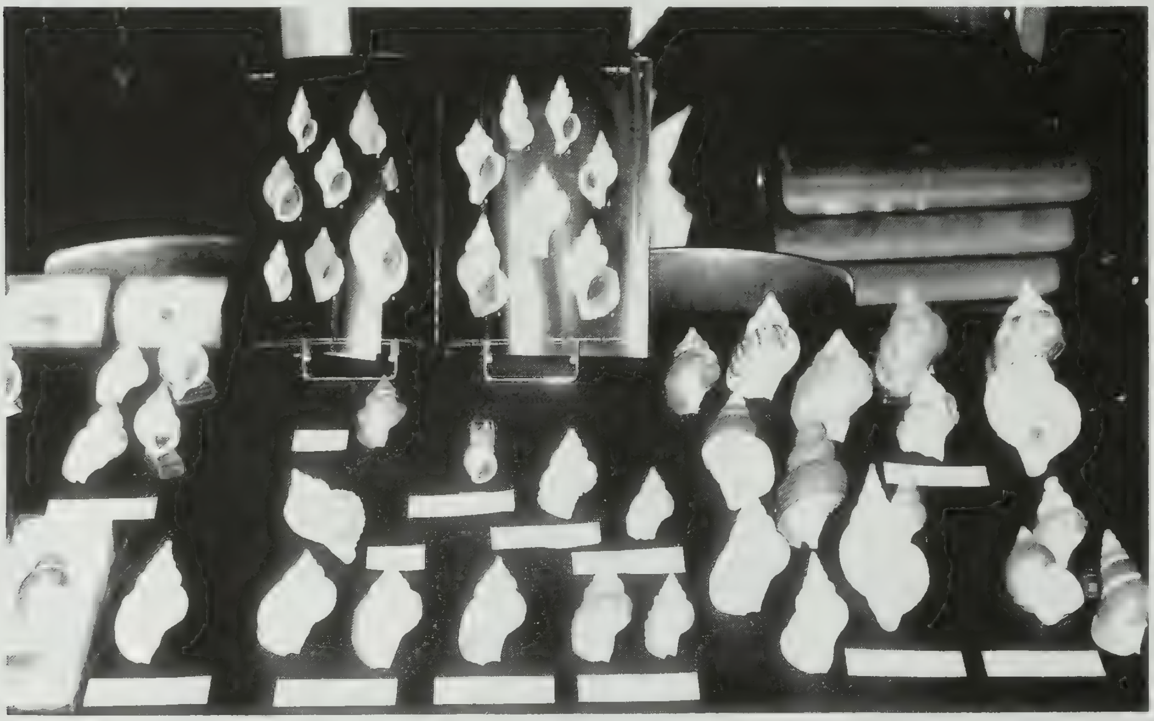
Beringius kennicottii (Dall, 1907) (Alaska). Représenté ici par la forme *incisus* Dall, 1907 et par une forme presque lisse.

Beringius eyerdami A.G.Smith, 1959 (Washington). Une forme sans cordons spiraux était exposée.

Beringius crebricostatus (Dall, 1877) (Iles Aleoutiennes). Extrêmement rare.

Beringius aleuticus Dall, 1894 (Iles Aleoutiennes bien sûr). Extrêmement rare. La coquille et surtout l'opercule font penser au genre *Japelion* Dall, 1916.

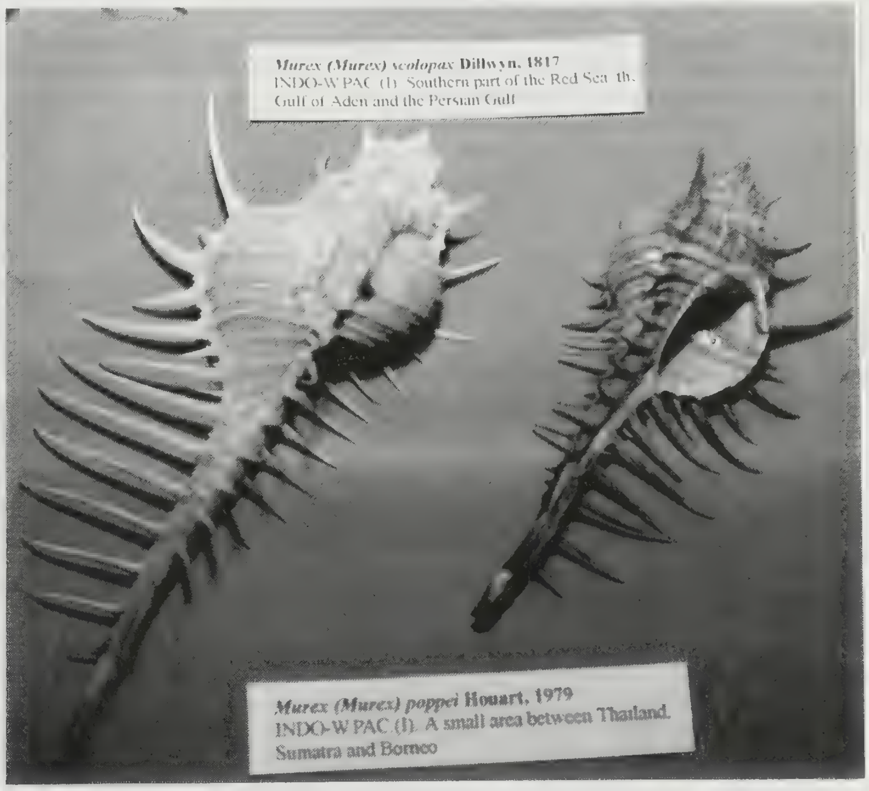
Beringius undatus (Dall, 1919) n'était malheureusement pas exposé, c'est la seule espèce que je recherche encore. Elle n'est pas très rare, mais apparemment j'ai eu plus de chances pour me procurer les autres espèces. *Beringius marshalli* Dall, 1919 (Alaska) n'était pas exposée non plus (il s'agit probablement d'une forme de *B. polynematicus*) ni *Strombella malleata* (Dall, 1884) (qui ressemble à une forme de *B. beringii*, mais on m'a fait remarquer que l' holotype ressemble également à un freak de *Buccinum glaciale*).



3. Roland Houart : Muricidae : Les genres *Murex* s.s. et *Haustellum*

J'avais choisi pour cette exposition, pour ne pas sortir de ma famille préférée, de vous présenter les genres *Murex* sensu stricto et *Haustellum*. L'un et l'autre ont fait récemment l'objet d'une révision par Ponder et Vokes (1988). Mes conclusions et mon classement ne sont pas toujours identiques aux leurs mais cela n'enlève rien à la beauté quelque peu irréelle[1] de ces coquillages. Le genre *Murex* est représenté par 31 espèces ou sous-espèces possédant chacune une coquille très épineuse pouvant, comme chez *M. troscheli*, parfois atteindre près de 20 cm. Le canal siphonal est très long et fin, épineux également. Le dernier tour de spire est orné de 3 varices et le bord externe de l'ouverture est pourvu d'une dent labrale. Sa distribution est largement Indo-Pacifique. Une espèce, *Murex forskoehlii* Röding, 1798 a pénétré en Méditerranée via le canal de Suez. Le genre *Haustellum* contient 11 espèces et sous-espèces et à la différence du genre *Murex* s.s. il ne présente pas d'épines. Le canal siphonal est également très long et fin. Le dernier tour de spire, large et globuleux, possède également 3 varices axiales. L'ouverture est arrondie et large et ne présente pas de dent labrale. La distribution géographique est uniquement Indo-Pacifique.

Ci-dessous je vous propose de découvrir la liste de toutes les espèces actuelles. En gras les spécimens exposés ce 12 janvier.


Murex (Murex) scolopax Dillwyn, 1817
INDO-W PAC (I). Southern part of the Red Sea, th.
Gulf of Aden and the Persian Gulf
Murex (Murex) poppei Houart, 1979
INDO-W PAC (I). A small area between Thailand,
Sumatra and Borneo

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[1] NDLR : notre ami se laisserait-il entraîner à des déclarations peu objectives ;-) ;-) ?

MUREX s.s.

***acanthostephes* Watson, 1883**
***aduncospinosus* Sowerby, 1841**
africanus Ponder & Vokes, 1988
***altispira* Ponder & Vokes, 1988**
***brevispina brevispina* Lamarck, 1822**
***brevispina macgillivrayi* Dohrn, 1862**
brevispina ornamentalis Ponder & Vokes, 1988
brevispina senilis Jousseaume, 1874
carbonnieri (Jousseaume, 1881)
concinnus Reeve, 1845
***coppingeri* E. A. Smith, 1884**
***falsitribulus* Ponder & Vokes, 1988**
***forskoehlii* Roding, 1798**
hystricosus Houart & Dharma, 2001
kerslakae Ponder & Vokes, 1988
megapex Neubert, 1998
***occa* Sowerby, 1834**
***pecten pecten* Lightfoot, 1786**
pecten soelae Ponder & Vokes, 1988
philippinensis Parth, 1994
***poppei* Houart, 1979**
queenslandicus Ponder & Vokes, 1988
salomonensis Parth, 1994
***scolopax* Dillwyn, 1817**
somalicus Parth, 1990
***spectabilis* Ponder & Vokes, 1988**
spicatus Ponder & Vokes, 1988
surinamensis Okutani, 1982
***tenuirostrum* Lamarck, 1822**
***ternispina* Lamarck, 1822**
***trapa* Roding, 1798**
***tribulus* Linnaeus, 1758**
***troscheli* Lischke, 1868**

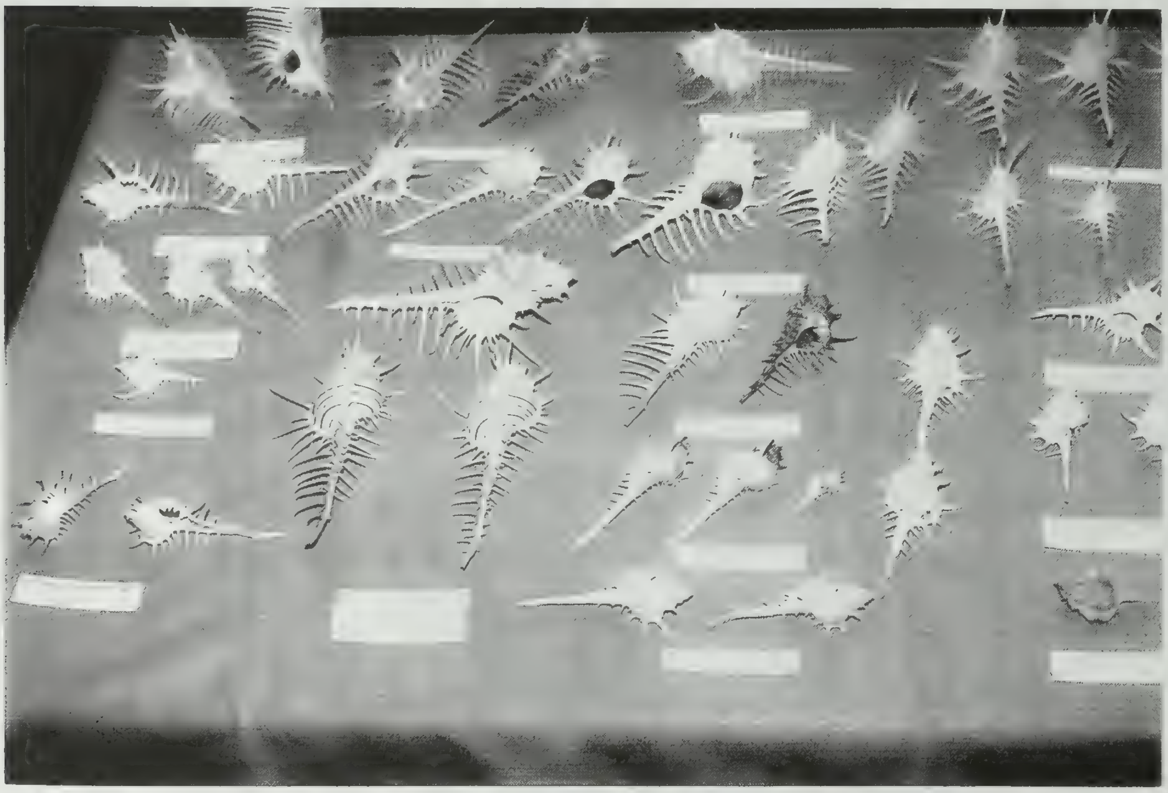
HAUSTELLUM

***barbieri* Houart, 1993**

bondarevi Houart, 1999
fallax (E. A. Smith, 1901)
franchii Bozzetti, 1993
***haustellum* (Linnaeus, 1758)**
***kurodai kurodai* (Shikama, 1964)**
***kurodai langleitae* Houart, 1993**
kurodai vicdani Kosuge, 1980
longicaudum F. C. Baker, 1891
***tweedianum* (Macpherson, 1962)**
wilsoni D'Attilio & Old, 1971

Référence

PONDER, W.F. & VOKES, E.H. 1988. Revision of the Indo-West Pacific fossil and Recent species of *Murex* s.s. and *Haustellum* (Mollusca: Gastropoda: Muricidae). *Records of the Australian Museum*, suppl. 8: 1-160.



4. Edgar Waiengnier : Les Facsimiliidae

Quelle chance extraordinaire que d'assister à une « **première** » !

A l'occasion de l'exposition annuelle de la S.B.M. chacun à pu découvrir avec intérêt une nouvelle famille qui n'a pas fini de faire parler d'elle.

Cette famille, exclusivement limitée aux copies plus ou moins artistiques, d'escargots nous a été dévoilée pour la première fois par LPG. (Evidemment !)
Le placement systématique de niveau supérieur à la famille est encore à l'étude. Nous avons donc découvert la famille et tous les niveaux taxonomiques inférieurs. A savoir

Famille :
  Facsimiliidae fam.nov. (copie)
S-famille :
  Ludoninae s-f.nov. (Jouets)
  Xyloninae s-f. nov. (à base de bois)
  Vitreaninae s-f. nov (à base de verre)
  Terraninae s-f. nov. (d'origine terrienne l.s.)
  Metaluminae s-f. nov. (à base de métal l.s.)
  Mixtusinae s-f. nov. (toutes les matières qui n'ont pas trouvé places plus haut)

Comme on peut le voir, la systématique de cette famille (nous dirons le fil conducteur) est basée sur la **composition** de la reproduction (fac-simili). Ceci a obligé l'auteur à plusieurs remaniements, surtout au niveau des genres. Pas moins de 33 actuellement, avec plus de 200 espèces décrites. Contrairement aux idées reçues, la composition n'est pas toujours évidente. Une révision est déjà envisagée au niveau des Ludoninae, trop d'incohérence vis-à-vis des autres sous familles. Il n'est pas exclu qu'elle disparaisse purement et simplement.

Chacun a pu également observer une nomenclature très recherchée. (pour les puristes !). Ce fut l'occasion pour l'auteur de faire preuve d'imagination dans les descriptions des nouvelles espèces. Excellent exercice de relaxation qu'il recommande à tous.

Coll: E. Waiengnier

5. Annie Langleit : Les Psammobiidae (Superfamille: Tellinoidea - Ordre: Veneroida)

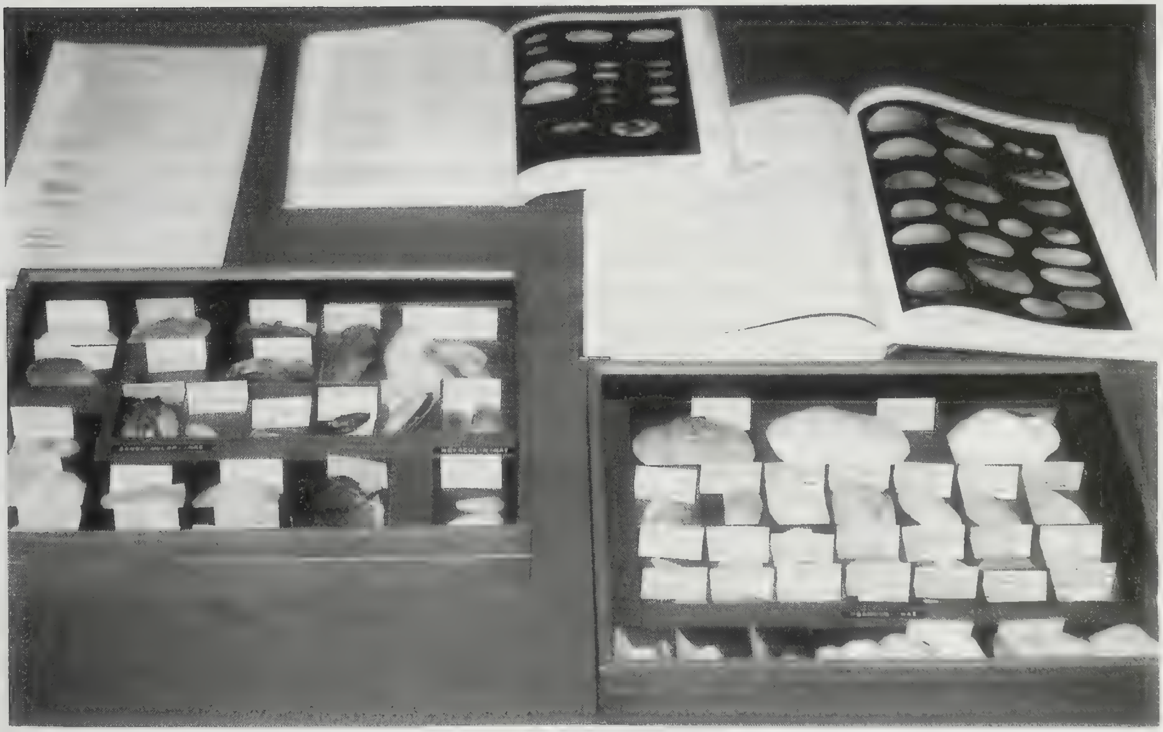
Bivalves très proches des Tellinidae, ils s'en distinguent généralement par une charnière à nymphes épaisses, souvent proéminentes postérieurement aux sommets des valves, sous le ligament externe, et aussi par une coquille non arquée à l'arrière. Ces coquilles sont généralement inéquivalves et légèrement baillantes. Elles présentent 1 à 3 dents cardinales et des dents latérales faibles ou absentes. Le sinus palléal est assez grand. A l'origine, ces bivalves ont été nommés comme *Tellina*, *Solen* ou même *Venus*. On distingue 3 sous-familles : Psammobiinae, Sanguinolariinae et Novaculininae.

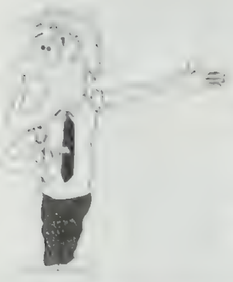
Les Psammobiinae sont ovales à trapézoïdales et comptent 5 genres récents : les *Gari* sont majoritaires et divisées en plusieurs sous-genres, puis les *Asaphis*, les *Ascitellina*, les *Heterodonax* et les *Orbicularia*.

Les Sanguinolariinae sont ovales, souvent plus ou moins rostrées et comptent les genres *Sanguinolaria* avec plusieurs sous-genres, puis les *Nuttallia* et les *Soletellina* ou *Hiatula*. Ce dernier genre pose des problèmes de classement que chaque auteur essaie de résoudre à sa façon, ce qui ne simplifie pas nécessairement les choses.

Les Novaculininae comportent les genres *Novaculina* et *Sinonovacula*.

Le classement généralement suivi est celui de Myra Keen dans Moore repris et modifié, entre autres, par Vaught en 1989 et par Millard en 1996. Vaught inclut les Solecutinae dans la famille des Psammobiidae, Millard en refait une famille séparée.





6. Ralph Duchamps : Les Heteropoda

Les *Heteropoda* étaient dans le passé nommés *Atlantacea*. Si nous voulons trouver leur place dans la systématique, nous dirons qu'ils appartiennent au **Phylum** des *Mollusques*, à la **Classe** des *Gastéropodes*, à la **Sous-Classe** des *Prosobranches* et à l'**Ordre** des *Mesogastropodes*. Mais cette superfamille à beaucoup voyagé dans la classification, à partir du moment où l'on a voulu construire l'arbre généalogique de ces animaux. La sacro-sainte phylogénie des différents cladisticiens a transporté nos *mesogastropodes* chez les *Cypraeacea*, les *Naticacea*, sans compter le groupe des *Echinospira*. Pour corser le tout, les *Heteropoda* ont été confondus avec les *Pteropoda* (ou fusionnés), alors que ces derniers appartiennent à l'ordre des *Thécosomes* (*Saccoglosses*). Les Hétéropodes vivent du niveau zéro à –1300m. Cette superfamille, se subdivise en 3 familles et 8 genres.

Ces gastéropodes sont bien adaptés à la nage et on en trouve dans toutes les mers du globe, toutefois plusieurs genres ne vivent que dans les mers tropicales. Environ 60% des espèces connues possèdent une coquille, mais 25% n'ont qu'une coquille de dimension réduite, et 15% n'ont pas de coquille du tout.

Dans la famille des *Atlantidæ*, toutes les espèces possèdent en principe une coquille dans laquelle l'animal peut entièrement se rétracter et refermer l'ouverture grâce à un opercule. Les sexes sont séparés, le développement des larves véligères varie selon les genres. Ceux-ci sont au nombre de trois.

Atlanta: 16 espèces, 3 sous-espèces. La coquille est dextre, pas entièrement planorboïde et mesure de 1,7 à 11mm, sa carène est cartilagineuse et se prolonge jusqu'à l'ouverture. L'opercule est ovale, et son nucleus est situé sur la ligne médiane.

Protatlanta: 1 espèce qui mesure de 1 à 1,5mm. Les caractéristiques générales sont semblables au genre précédent, toutefois la carène totalement transparente se continue jusqu'à l'ouverture et l'opercule est de forme circulaire. La radula est légèrement différente de celle d'Atlanta.

Oxygyrus: 1 espèce qui atteint 10mm. La coquille est planorboïde, cartilagineuse et transparente à l'état adulte. Il en va de même pour la carène. L'ouverture est triangulaire, le sommet dirigé vers l'extérieur, tandis que la base est concave et située vers le côté interne. L'opercule est de forme trapézoïdale, le nucleus ne se trouve pas sur la ligne médiane.

La seconde famille appelée *Carinariidæ* comprend trois parties, la tête ou proboscis, le corps et la masse viscérale. Cette dernière supporte à sa pointe extrême une coquille fragile qui ne peut contenir toutes les parties molles. La famille se divise en trois genres.

Carinaria: 4 espèces, 6 formes qui possèdent les plus grandes coquilles de la superfamille. La plus grande espèce a un corps qui peut atteindre 500mm pour une coquille de 85mm tandis que la plus petite a un corps de 50mm.

Cardiapoda: 2 espèces dont la coquille est plus petite que chez *Carinaria* et insère une plus petite part de la masse viscérale. La partie molle est prolongée par une sorte de queue courte se terminant en forme de flèche, ou longue et filiforme, selon l'espèce. La longueur totale de l'animal est respctivement de 50 et 20mm.

Pterosoma: 1 espèce dont le corps est de forme ramassée, déprimée dorso-ventralement. Cet ensemble disquoïde est terminé par une courte queue. La coquille est petite, enroulée et plate en forme de clou, dont la carène relie le bord de l'ouverture à la coquille embryonnaire. L'animal mesure 80mm.

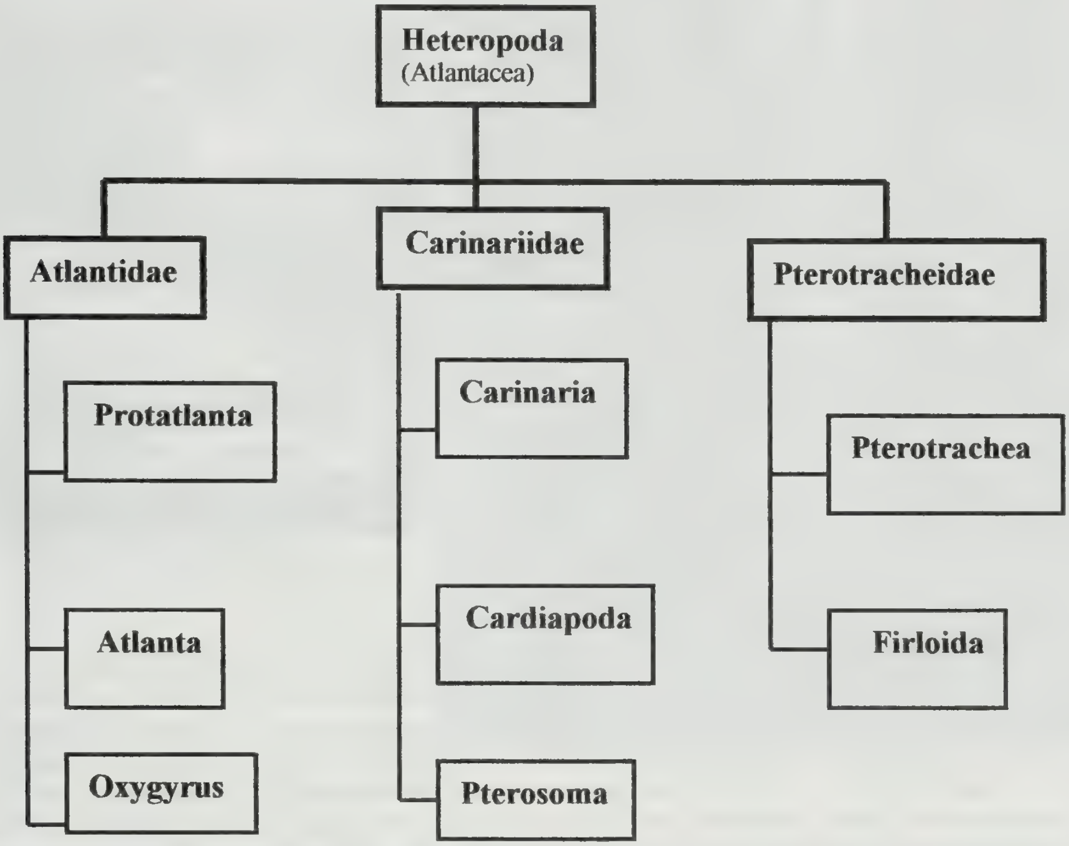
La troisième et dernière famille dénommée *Pterotracheidæ* est très comparable en forme et en dimensions aux *Carinariidæ* (40 à 260mm). Toutefois elle s'en distingue par l'absence de coquille et un nucleus visceral plus petit. Elle se subdivise en deux genres.

Pterotrachea: 4 espèces qui ne possèdent pas de tentacules antérieurs aux yeux et dont les femelles ne sont pas munies de nageoire avec ventouse. Présence d'une queue bilobée postérieure au nucleus. Selon les espèces la longueur varie de 50 à 260mm.

Firoloida: 1 espèce très commune de 40mm au corps long, cylindrique et transparent comportant un proboscis frontal court et un nucleus viscéral globuleux à l'autre extrémité. L'espèce présente un dimorphisme sexuel. Le mâle possède une nageoire avec ventouse, des tentacules implantés avant les yeux, un volumineux pénis, une queue rudimentaire se terminant par un long filament. Le tout se trouvant sous le nucleus viscéral. Chez la femelle, la queue est absente, seuls deux lobules obtus en forme de crochet sont présents et servent à enfiler les œufs lors de la ponte.

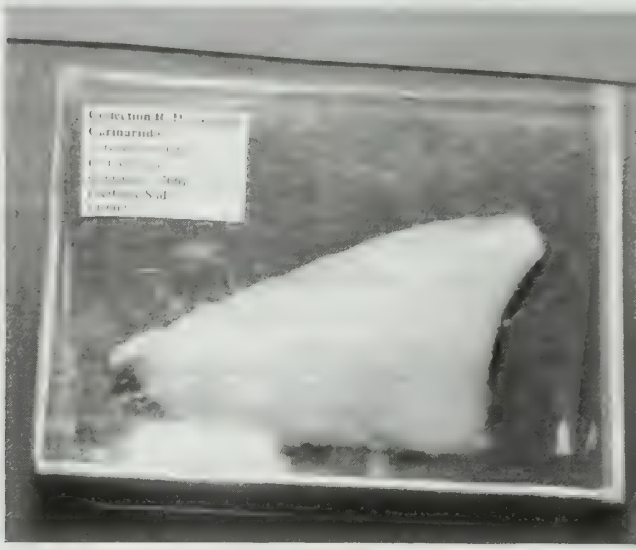
Inutile de dire que les coquilles des espèces de cette superfamille sont toutes fragiles, et souvent petites. Les parties molles doivent être conservées en alcool, et tout examen microscopique nécessite fréquemment la coloration préalable des organismes, ce qui facilite l'observation. En ce qui concerne la détermination des espèces, les taxa principaux concernent la formule de la spire, l'examen de la radula, la grandeur et la forme de l'opercule ainsi que son attache musculaire, l'examen des yeux et du nucleus viscéral, sans compter la morphométrie.

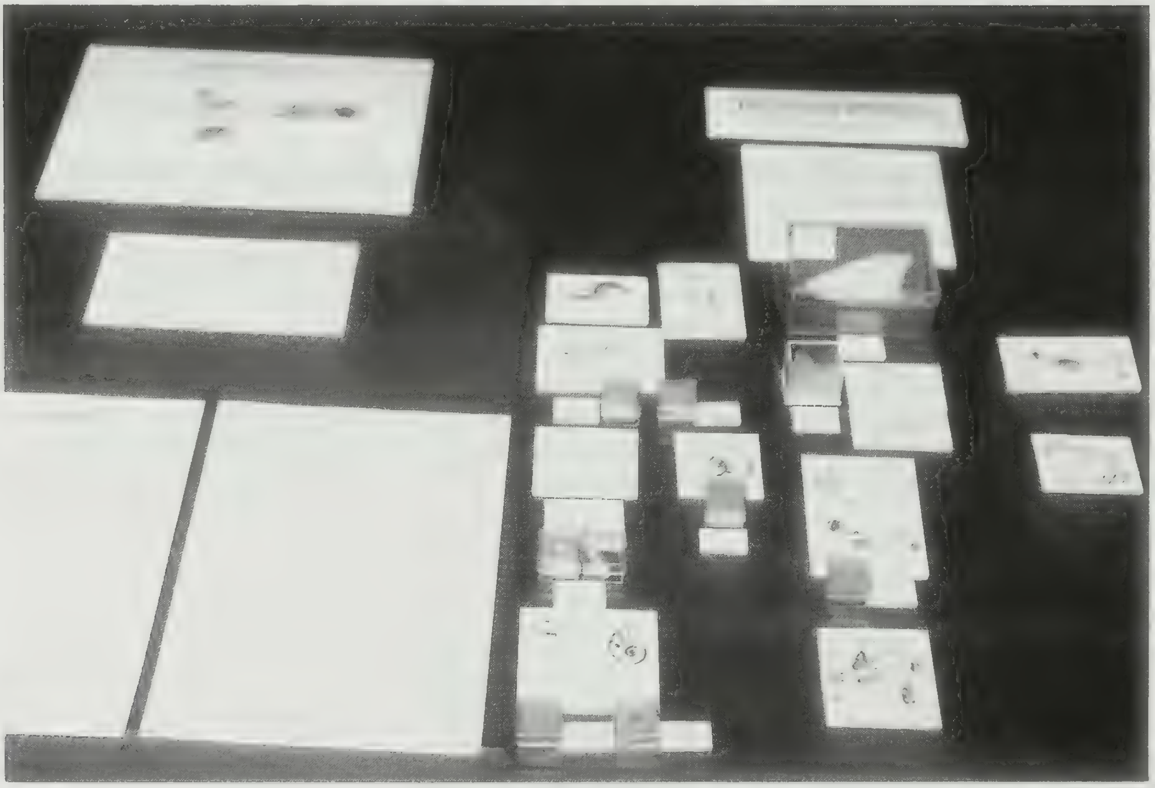
Les Hétéropodes ne sont pas souvent présents dans les collections, et pourtant ils ne sont pas rares. Cela provient du fait qu'ils n'ont pas un caractère esthétique et que l'observateur ne les imagine pas en tant que mollusque.


Heteropoda
(Atlantacea)
Atlantidae
Carinariidae
Pterotracheidae
Protatlanta
Atlanta
Oxygyrus
Carinaria
Cardiapoda
Pterosoma
Pterotrachea
Firloida

Carinaria lamarcki Peron & Lesueur, 1810 Ex f. *lamarcki* Peron & Lesueur, 1810

Le Museum d'Histoire naturelle de Paris possédait en 1819 un exemplaire de cette coquille, qui lui avait été donnée par M. Huon et provenait de l'expédition d'Entrecasteaux.
(Cfr. Lamarck : « Anim. s/vert. VII p.673 » 1822)
Le second exemplaire connu à Paris provenait de la vente de M. Pierre Lyonet qui fût acquis par Ch. H. Hwass
(Cfr. Cat. Raison. du célèbre cabinet de coquilles de Pierre Lyonet, publié à La Haye en1796)


Collection R. D.
Carinarida



7. Claude Vilvens : Grands Trochidae et cladistique

Pour être honnête, je dois bien dire que je ne savais pas trop quoi exposer cette fois : il me semblait avoir déjà bien exploité les familles qui m'intéressent, c'est-à-dire les Turbinidae, Littorinidae et Cerithiidae (les Strombidae m'étant à présent interdits en public ;-) – pas vrai, Etienne ?). Et tout naturellement, je suis donc revenu vers ma famille de prédilection qui fait hurler de jalousie les Muricidae eux-mêmes : j'ai nommé les Trochidae.

Première réflexion à leur sujet : un Trochidae, ce n'est pas grand. De fait, les grands Trochidae sont assez peu nombreux. Tout le monde connaît bien sûr *Trochus maculatus* Linné, 1758 ou *Trochus niloticus* Linné, 1767. Mais il en est d'autres assez grands, comme certains *Maurea* ou certains *Bathybembix*. Evidemment, la notion de grande taille est relative : on peut être considéré comme grand dans une sous-famille alors que l'on serait catalogué petit dans une autre. Etaient donc exposées les espèces suivantes :

Tegula regina (Stearns, 1892) [Californie]
Tegula (Chlorostoma) atra (Lesson, 1830) [Chili]
Norrisia norrisi (Sowerby, 1838) [Californie]
Turcica coreensis (Pease, 1860) [Japon]
Ginebis argenteonitens (Lischke, 1872) [Japon]
Lischkeia alwinae (Lischke, 1871) [Taïwan]
Bathybembix macdonaldi (Dall, 1890) [Chili]
Margarites ochotensis Philippi, 1846 [Russie]
Gaza superba (Dall, 1881) [Cuba]
Gaza olivacea Quinn, 1991 [Surinam]
Trochus niloticus Linné, 1767 [Philippines]
Tectus dentatus (Forskål, 1775) [Mer Rouge]
Tectus pyramis (Born, 1778) [Japon]
Clanculus undatus (Lamarck, 1816) [Australie Ouest]
Diloma tigrina (Anton, 1839) [Afrique du Sud]
Cittarium pica (Linné, 1758) [Guadeloupe]
Cantharidus opalus (Martyn, 1784) [Nouvelle Zélande]
Tosatrochus attenuatus (Jonas, 1845) [Nouvelle Calédonie]
Calliostoma scotti Kilburn, 1973 [Afrique du Sud]
Calliostoma formosense E.A.Smith, 1907 [Taïwan]
Maurea tigris (Gmelin, 1791) [Nouvelle Zélande]
Pseudostomatella papyracea (Gmelin, 1791) [Philippines]
Stomatia phymotis Helbling, 1779 [Nouvelle Calédonie]
Solariella zaccaloides Schepman, 1908 [Philippines]
Ethalia guamensis (Quoy & Gaimard, 1834) [Philippines]
Umbonium giganteum (Lesson, 1831) [Japon]
Bankivia fasciata (Menke, 1830) [Australie Sud]
Monilea lentiginosa A.Adams, 1851 [Queensland]

La notion de sous-famille m'amène à la deuxième réflexion. Car, puisque nous parlons de sous-familles, sans doute n'est-il pas inutile de repréciser celles qui constituent la famille des Trochidae. Il est surprenant, en effet, de constater que nombre de revues malacologiques "grand public" semblent ignorer qu'une révision systématique au niveau supra-générique a été réalisée il y a plus de10 ans par Hickman & Mc Lean[1]. Cette révision est basée sur l'ensemble des caractères taxonomiques, donc bien sûr ceux concernant la coquille, mais aussi et surtout ceux relevant de l'anatomie interne et externe (branchies, epipodium, radula, tentacules, etc). Les Turbinidae y sont à présent considérés comme plus primitifs que les Trochidae (on considérait plutôt l'inverse jusqu'alors), les Skeneidae constituant la troisième et dernière famille la plus évoluée au sein des Trochoidea. Un autre résultat systématique, exposé dans le tableau ci-dessous (avec quelques ajouts postérieurs à cette révision), est la disparition de certaines sous-familles (comme les Monodontinae) et l'apparition de nouvelles (comme les Lirulariinae), ou encore le passage à l'état de tribu (comme les Gibbulinae qui deviennent des Gibbulini, tribu de la sous-famille des Trochinae) et la migration de certaines vers une autre famille (comme les Angariinae qui sont classés dans les Turbinidae malgré leur opercule corné). Les mêmes auteurs proposent en fin d'ouvrage plusieurs cladogrammes, dont l'un reflétant l'évolution des Trochidae les plus primitifs (les Tegulinae) vers les plus évolués (les Umboniinae). J'ai reconstruit, pour l'occasion de l'exposition, le schéma de ce cladogramme avec les coquilles citées plus haut comme exemples. On trouvera aussi dans les deux pages suivantes une liste des genres et sous-genres Récents qui me sont connus chez les Trochidae, taxons classés par sous-familles et tribus.

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[1] Hickman, C.S. & Mc Lean, J.H. 1990. Systematic revision and suprageneric classification of trochacean gasteropods. Natural History Museum of Los Angeles County Science Series. VI+169 pp.

1. Tegulinae Kuroda, Habe and Oyama, 1971
Tegula Lesson, 1835
(*Agathistoma)* Olsson & Harbison, 1953
(*Chlorostoma)* Swainson, 1840
(*Omphalius*) Philippi, 1847
(*Promartynia)* Dall, 1909
(*Stearnsium)* Berry, 1958
Norrisia Bayle, 1880

2. Eucyclinae Koken, 1897
Chilodontini Wenz, 1938
Agathodonta Cossman, 1918
Danilia Brusina, 1865
Dentistyla Dall, 1889
Euchelus Philippi, 1847
(*Vaceuchelus*) Iredale, 1929
Granata Cotton, 1957
Herpetopoma Pilsbry, 1889
Hybochelus Pilsbry, 1889
Mirachelus Woodring, 1928
Synaptocochlea Pilsbry, 1890
Tallorbis G.&H.Nevill, 1869
Turcica A.Adams, 1854
Calliotµropini Hickman and Mc Lean, 1990
Calliotropis Seguenza, 1903
(*Solaricida*) Dall, 1919
Bathybembix Crosse, 1893
Bathymargarites Waren & Bouchet, 1989
Cidarina Dall, 1909
?***Echinogurges*** Quinn, 1979
Convexia Nodia, 1975
Ginebis Taki and Otuka, 1942
Lischkeia Fisher in Kiener, 1879
(*Turcicula*) Dall, 1881
Putzeysia Sulliotti, 1889
Vetulonia Waren & Bouchet, 1993

3. Margaritinae Stoliczka, 1868
Margaritini Stoliczka, 1868
Margarites Gray, 1847
(*Cantharidoscops*) Galkin, 1955
(*Valvatella*) Gray, 1857 = (*Pupillaria*) Dall, 1909
Antimargarita Powell, 1951
Omphalomargarites Habe & Ito, 1965
Tibatrochus Nomura, 1940
Tropidomarga Powell, 1951
Gazini Hickman and Mc Lean, 1990
Gaza Watson, 1879
(*Callogaza*) Dall, 1881
Kaiparathini Marshall, 1993
Kaiparathina Laws, 1941

4. Trochinae Rafinesque, 1815
Trochini Rafinesque, 1815
Trochus Linné, 1758
(*Belangeria*) Fischer, 1880
(*Camelotrochus*) Marshall, 1998
(*Coelotrochus*) Fischer, 1879
(*Infundibulops)* Pilsbry, 1889
(*Infundibulum)* Montfort, 1810
(*Kanekotrochus*) Habe, 1958
(*Praecia*) Gray, 1857
(*Thorista*) Iredale, 1915
(*Thoristella*) Iredale, 1915
Clanculus Montfort, 1810
(*Camitia)* Gray, 1847
(*Clanculopsis)* Monterosato, 1879
(*Euclanculus)* Cotton & Godfrey, 1934
(*Euriclanculus)* Cotton & Godfrey, 1934
(*Isoclanculus)* Cotton & Godfrey, 1934
(*Macroclanculus)* Cotton & Godfrey, 1934
(*Mesoclanculus)* Iredale, 1924
(*Microclanculus* Cotton & Godfrey, 1934
(*Paraclanculus)* Finlay, 1927)
Oligomeria Galkin & Golikov, 1985
Pseudotalopia Habe, 1961
Rubritrochus Beck, 1995
Tectus Montfort, 1810
(*Cardinalia)* Gray, 1847
(*Rochia)* Gray, 1857
Gibbulini Stoliczka, 1868
Gibbula Risso, 1826
(Colliculus) Monterosato, 1888
(Forskalena) Iredale, 1818
(Phorcus) Risso, 1826
(Pseudodiloma) Cossman, 1888
(Steromphala) Gray, 1847
(Tumulus) Monterosato, 1888
Agagus Jousseaume, 1894
Austrocochlea Fischer, 1885
Cantharidella Pilsbry, 1889
Chrysostoma Swainson, 1840
Cittarium Philippi, 1847
Diloma Philippi, 1845
(Cavodiloma) Finlay, 1927
(*Fractarmilla*) Finlay, 1927
(Oxystele) Philippi, 1847
Enida A.Adams, 1860
Eurytrochus Fischer, 1880
Fossarina Adams & Angas, 1864
(*Minopa*) Iredale, 1924
(*Clydonochilus)* Fischer, 1890 =? *Pagodatrochus*
Margarella Thiele, 1893
Melagraphia Gray, 1847
Monodonta Lamarck, 1799
Nanula Thiele, 1921
Notogibbula Iredale, 1924
Osilinus Philippi, 1845
Pagodatrochus Herbert, 1989
Priotrochus Fischer, 1879
Cantharidini Cotton, 1959
Cantharidus Montfort, 1810
(*Iwakawatrochus,*) Kuroda & Habe, 1954
(*Mawhero*) Marshall, 1998
(*Plumbelenchus*) Finlay, 1927
Alcyna A.Adams, 1860
Calthalotia Iredale, 1929
Calliotrochus Fischer, 1879

Clelandella Winckworth, 1932
Jujubinus Monterosato, 1884
(*Manotrochus*) Fischer, 1885
(*Pictijubinus*) Nordsieck, 1973
(*Mirulinus*) Monterosato, 1917
(*Gravijubinus*) Nordsieck, 1973
(*Scrobiculinus*) Monterosato, 1889
Kanekotrochus Habe, 1958
Komaitrochus Kuroda & Taki, 1958
Micrelenchus Finlay, 1927
Phasianotrochus Fischer, 1885
Prothalotia Thiele, 1930
Thalotia Gray, 1847
(*Odontotrochus*) Fischer, 1880
Tosatrochus Mac Neil, 1960

5. Stomatellinae Gray, 1840
Gena Gray, 1850
Microtis A.Adams, 1850
Pseudostomatella Thiele, 1924
(*Stomatolina*) Iredale, 1937
Stomatella Lamarck, 1816
Stomatia Helbling, 1779

6. Calliostomatinae Thiele, 1924
Calliostoma Swainson, 1840
(*Alertalex*) Dell, 1956
(*Ampullotrochus*) Monterosato, 1890
(*Benthastelena*) Iredale, 1936
(*Elmerlinia*) Clench & Turner, 1960
(*Eucasta*) Dall, 1889
(*Fautor*) Iredale, 1924
(*Kombologion*) Clench & Turner, 1960
(*Laetifautor*) Iredale, 1929
(*Otukaia*) Ikebe, 1942
(*Salsipotens*) Iredale, 1924
(*Sinutor*) Cotton & Godfrey, 1935
(*Spikator*) Cotton & Godfrey, 1935
(*Tristichotrochus*) Ikebe, 1942
Astele Swainson, 1855
(*Astelena*) Iredale, 1924
(*Coralastele*) (Iredale, 1930)
(*Omphalotukaia*) Yoshida, 1948
Bathyfautor Marshall, 1995
Callumbonella Thiele, 1924
Dactylastele Marshall, 1995
Fautrix Marshall, 1995
Falsimargarita Powell, 1951
Maurea Oliver, 1926
Photinula H.Adams & A.Adams, 1854
Photinastoma Powell, 1951
Selastele Marshall, 1995
Venustatrochus Powell, 1951

7. Solariellinae Powell, 1951
Solariella Wood, 1842 (=*Machaeroplax* Friele, 1877)
(*Micropiliscus* Dall, 1927)
Archiminolia Iredale, 1929
Bathymophila Dall, 1881
Ethaliopsis Schepman, 1909
Ilanga Herbert, 1987
Lamellitrochus Quinn, 1991
Microgaza Dall, 1881
Minolia A.Adams, 1860
Minolops Iredale, 1929
Spectamen Iredale, 1924 (=*Zeminolia* Finlay, 1927)
Suavotrochus Dall, 1924
Zetela Finlay, 1927

8. Halistylinae Keen, 1958
Halistylus Dall, 1890
Botelloides Strand, 1928
Charisma Hedley, 1915
(*Cavostella*) Laseron, 1954
(*Cavotera*) Laseron, 1954
Fucaria Waren & Bouchet, 1993

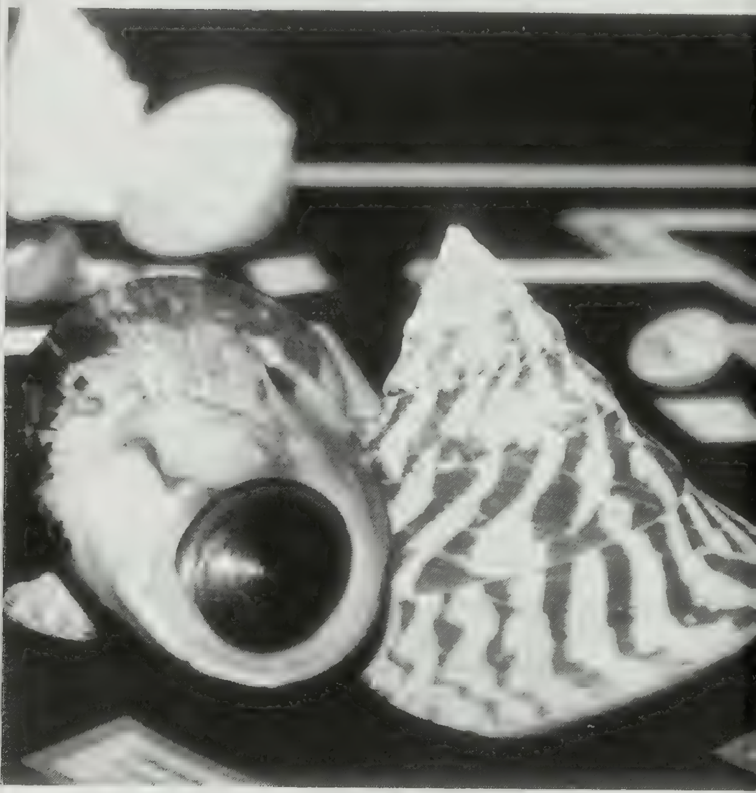
9. Lirulariinae Hickman and Mc Lean, 1990
Lirularia Dall, 1909

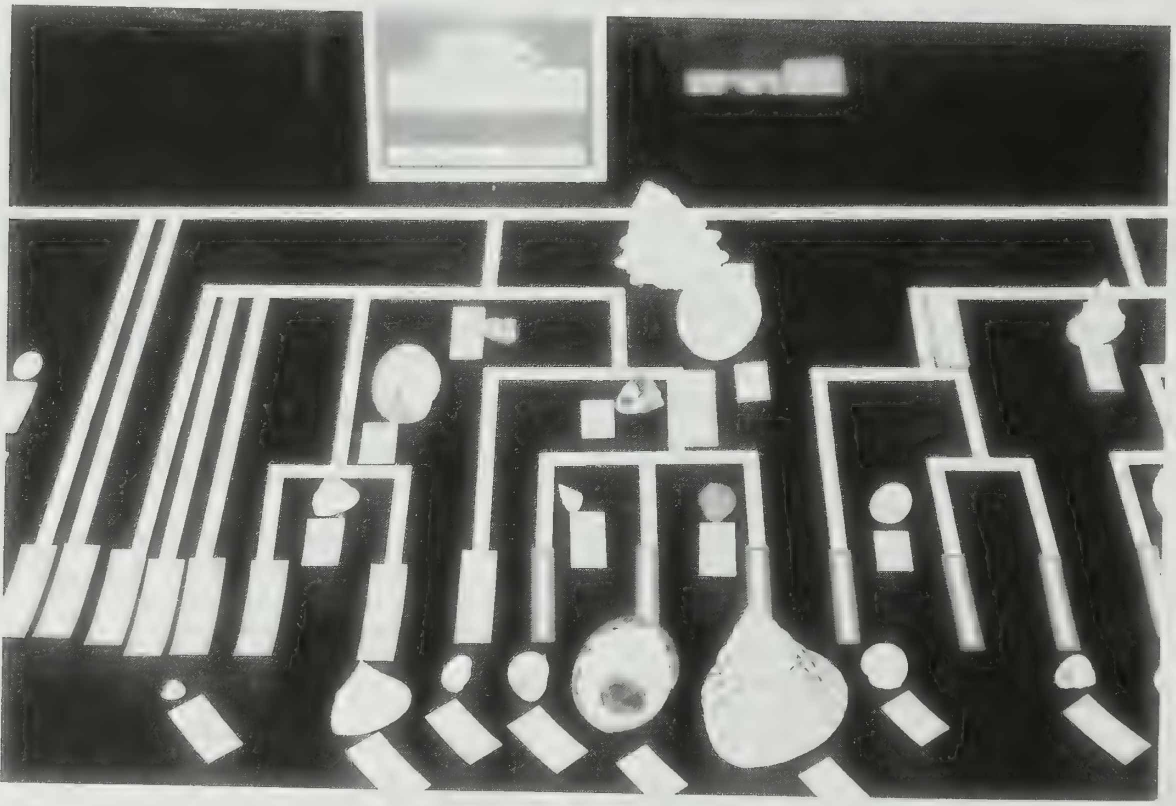
10. Umboniinae Adams and Adams, 1854
Monileini Hickman and Mc Lean, 1990
Monilea Swainson, 1840
Antisolarium Finlay, 1827
Camitia Adams & Adams, 1854
Conotalopia Iredale, 1929
Ethalia Adams & Adams, 1854
Ethaliella Pilsbry, 1905
Ethminolia Iredale, 1924
Isanda Adams & Adams, 1854
Parminolia Iredale, 1929
Rossiteria Brazier, 1895
Talopena Iredale, 1918
Vanitrochus Iredale, 1929
Zethalia Finlay, 1927
Bankiviini Hickman and Mc Lean, 1990
Bankivia Krauss, 1848
Leiopyrga Adams & Adams, 1863
Umboniini Adams and Adams, 1854
Umbonium Link, 1807
(*Suchium*) Makiyama, 1924
Inkaba Herbert,1992
Pseudominolia Herbert, 1992

11. Cataeginae Mc Lean and Quinn, 1987
Cataegis Mc Lean & Quinn, 1987

12. Trochaclidinae Thiele, 1928
Trochaclis Thiele, 1912
Acremodonta Marshall, 1983

13. Thysanodontinae Marshall, 1988
Thysanodonta Marshall, 1988
Carinastele Marshall, 1988
Herbertina Marshall, 1988





8. Rika et Fernand De Donder : Les ouvrages malacologiques concernant le Japon et les Philippines

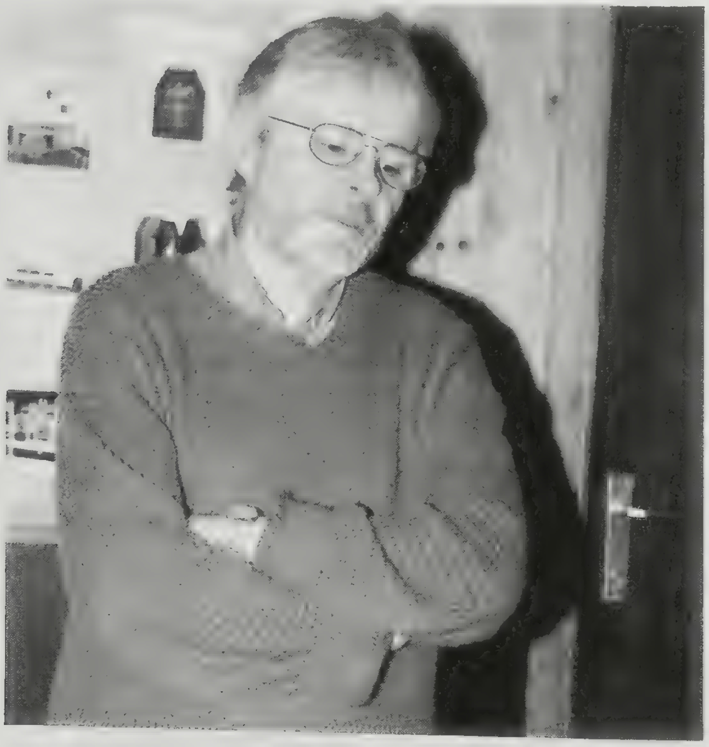
Etaient ici exposés un nombre impressionnant d'ouvrages traitant des mollusques de la zone géographique allant du Japon aux Philippines. Les deux vedettes sont les deux récents ouvrages traitant des coquilles du Japon :

Okutani, T. 2000. Marine Mollusks in Japan, Tokai University Press, Tokyo, Japan, 1173 pp.

et

Higo, S., Callomon, P. & Goto, Y. 1999 + part Type figures 2001. Catalogue and bibliography of the Marine Shell-Bearing Mollusca of Japan. Gastropoda. Bivalvia. Polyplacophora. Scaphopoda.

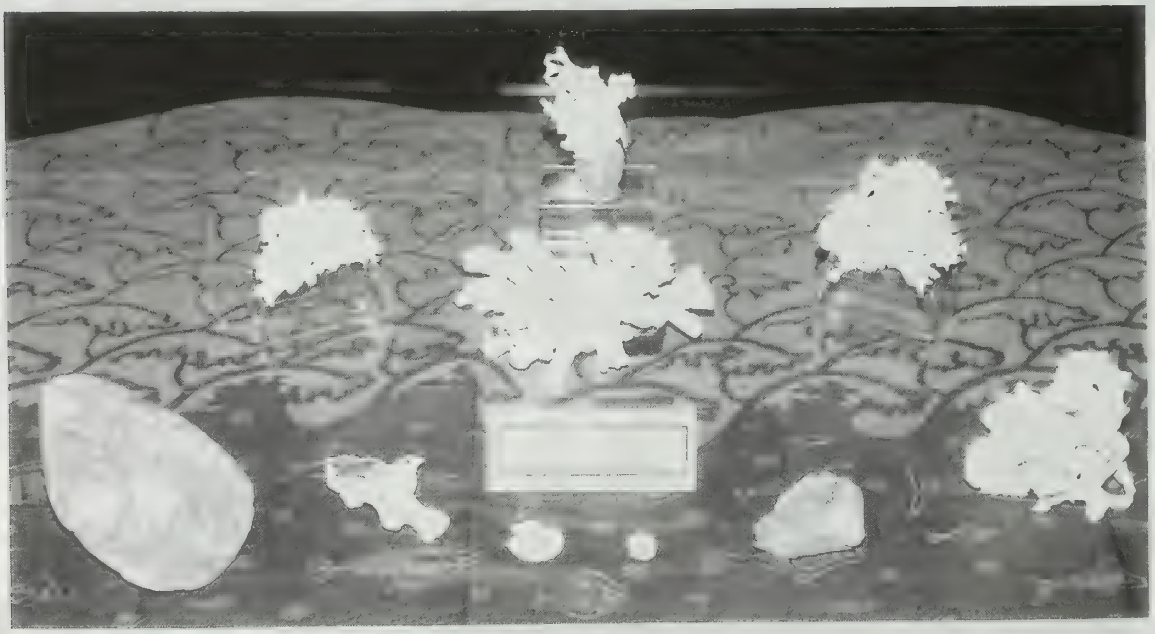
Il s'agit certes de références incontournables dans leur genre, mais ô combien onéreuses (pour ne pas dire monstrueusement coûteuses) et donc d'un accès difficile au malacologue prolétaire …



9. Christiane Delongueville et Roland Scaillet : *Crassadoma pusio* (Linnaeus, 1758)

Crassadoma pusio (Linnaeus,1758), plus connu sous le nom de *Chlamys (Hinnites) distorta* (Da Costa, 1778), est un représentant européen de la famille des Pectinidae. A l'état juvénile ce bivalve est parfaitement symétrique. En grandissant, il se fixe par sa valve inférieure (la droite) sur des substrats solides et prend dès lors les formes les plus bizarres et les plus tourmentées. Des spécimens de *Crassadoma pusio* incrustés sur différents substrats font l'objet de cette exposition. [Substrats minéraux : granite, silex, basalte - substrats animaux : Bryozoaires comme *Porella compressa* (J. Sowerby, 1805) et *Pentapora fascialis* (Pallas, 1766); Scléractiniaires comme *Dendrophyllia cornigera* (Lamarck, 1816) ou encore sur d'autres mollusques comme par exemple des valves de *Pecten maximus* (Linnaeus, 1758) - substrats végétaux : crampons de laminaires.]

Distribution : de l'Islande et du Nord de la Norvège, en passant par les îles Britanniques, les côtes de Bretagne, la péninsule ibérique, jusqu'au sud dans le golfe de Guinée, avec une incursion sur les côtes de la Méditerranée voisines du détroit de Gibraltar.



10. Rita Senders : "COQUILLES ... ART"

Les artistes sont, sans cesse, à la recherche de nouveaux objets susceptibles d'éveiller leur inspiration. Les coquillages ne sont-ils pas un matériel de choix tant par leurs formes élégantes et variées que par l'évocation immédiate d'instant heureux, de vacances insouciantes ?

C'est pourquoi, on découvre dans toutes les contrées touristiques des créations, plus ou moins réussies, d'assemblages de ces petits hôtes marins. Je me suis contentée de réunir et de présenter quelques parures et bijoux ramenés de nos séjours au bord de mers proches ou lointaines. Il s'agit le plus souvent de créations purement artisanales mais où pointent parfois un véritable sens esthétique. A chacun le plaisir de jeter un œil simplement curieux ou, pourquoi pas, un regard admiratif à ces "coquilles... art".

Bracelets :

- Fragments d'*Haliotis* sur argent.	YUCATAN (Mexique).

Broches :

- Fragment d'*Haliotis* poli sur monture argent.	NOUVELLE ZELANDE.
- Centre de *Nautilus pompilius* et feuillage argent.	MIKONOS (Grèce).

Ceinture :

- Ceinture de nassaridae et sommets de cônes, sur bande de fibres végétales.	SUMBAWA (Indonésie)

Colliers :

- *Cypraea obvelata, Cypraea mauritiana* et deux *caputserpentis.*	TAHITI.
- Naturelles	
- Peints	TAHITI.
- Centre et deux fragments de *Nautilus pompilius* cousus sur lien de fibres.	BALI.
- *Trivias* simplement enfilées.	BALI.
- *Umbonium vestiarum.*	VIETNAM.
- Trois fois trois *Callista* species sur gros lien de fibres.	THAILANDE.

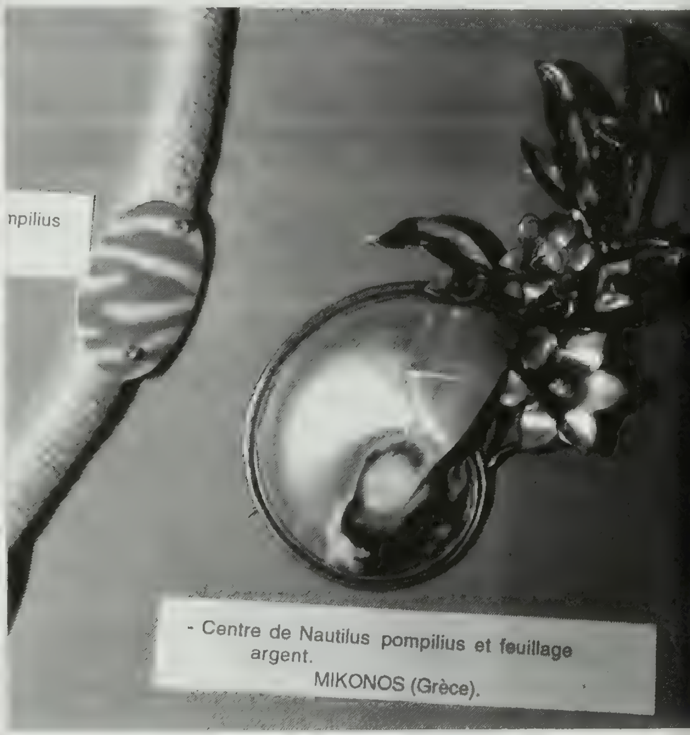
Couronnes :

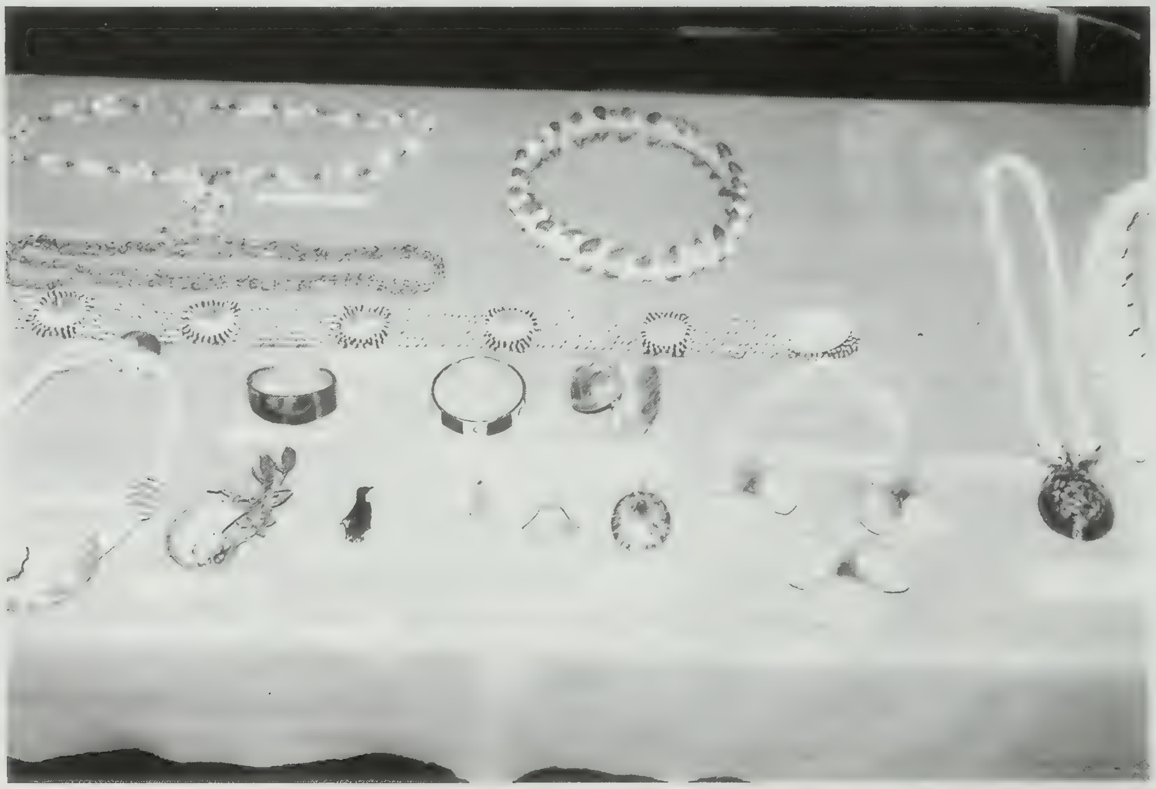
- Coquillages terrestres.	TAHITI.
- Trois rangs de Fragum fragum (Cardiidae). "Hereheretue« en polynésien.	TUAMOTU. Polynésie Française.

Ces couronnes posées sur les chapeaux d'hommes (elles remplacent les rubans des chapeaux de feutre de chez nous) servent à les maintenir en place par leur poids. Les femmes mettent quelquefois une couronne légère faite de mollusques terrestres directement sur leurs cheveux.

Pendentifs :

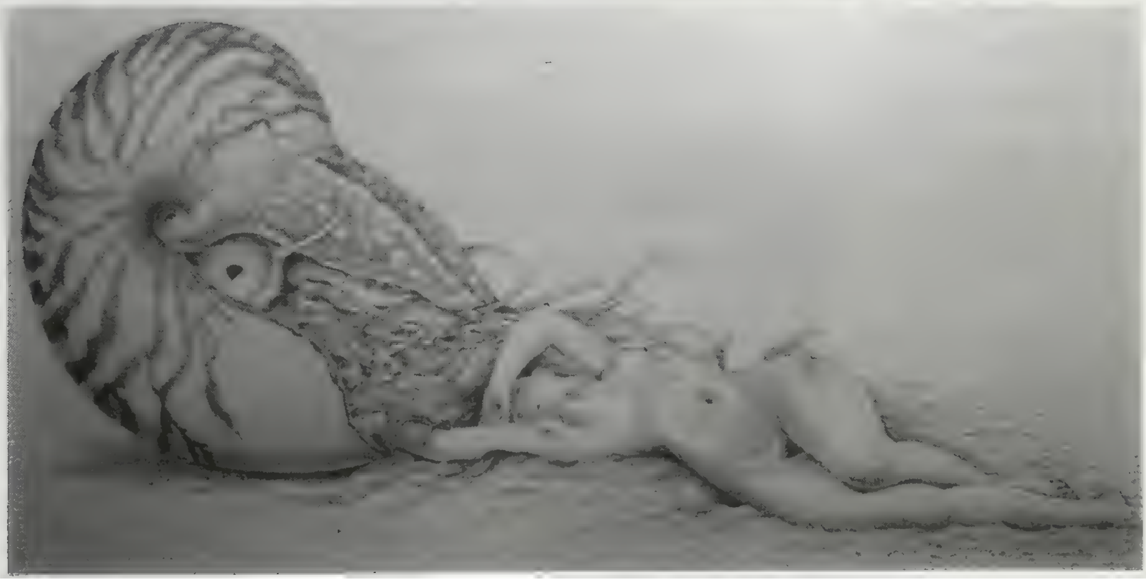
- Double face: deux patelles polies.	INDONESIE.
- Valve *d'Amusium* cerclée d'or.	JORDANIE.
- Ostreidae sur argent.	PHILIPPINES.
- Double face: deux chitons polis et cerclés d'or.	REPUBLIQUE DOMINICAINE.
- Coupes transversales de Strombe sur argent.	PHILIPPINES.

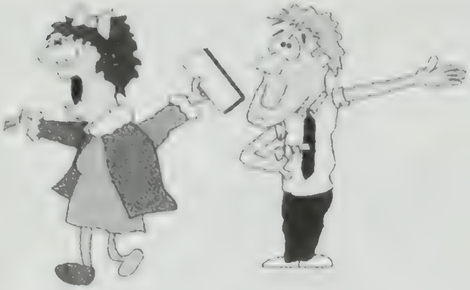

npilius
- Centre de Nautilus pompilius et feuillage argent.
MIKONOS (Grèce).



11. Simone Maenhaut : La rétrospective

Notre artiste malacologue ne nous a pas, cette fois, proposé une œuvre nouvelle mais, au contraire, nous a invité à nous souvenir de ses réalisations successives créées à l'occasion des dernières expositions.





12. Jeannine et René Masson : Les Marginelles

Jeannine et René Masson ont présenté les Marginelles en deux familles : CYSTISCIDAE et MARGINELLIDAE, selon la scission opérée par G.A et H.K. COOVERT. Les deux familles ainsi créées comportent plusieurs sous-familles, tribus et genres.

I. CYSTISCIDAE Stimpson,,, 1865	
SOUS-FAMILLES :	
Cystiscinae Stimpson,,, 1865	
Genres	*Cystiscus* Stimpson, 1865 *Crithe* Gould, 1860 *Extra* Jousseaume, 1894
Granulininae G.A. et H.K. Coovert,,, 1995	
Genres	*Granulina* Jousseaume, 1888 *Pugnus* Hedley, 1896
Persiculinae G.A. et B.K. Coovert,,, 1995	
Genres	*Persicula* Schumacher, 1817 *Canalispira* Jousseaume, 1875 *Gibberula* Swainson, 1840
Plesiocystiscinae G.A. et H.K. Coovert,, 1995	
Genre	*Plesiocystiscus* G.A. et H.K. Coovert, 1995
II. MARGINELLIDAE J. Fleming,,, 1828	
SOUS-FAMILLES :	
Marginellinae J. Fleming,,, 1828	
TRIBU : Marginellini J. Fleming,,, 1828	
Genres	*Marginella* Lamarck, 1799 *Dentimargo* Cossmann, 1899 *Eratoidea* Weinkauff, 1879 *Clabella* Swainson, 1840
TRIBU : Austroginellini G.A. et B.K. Coovert,,, 1995	
Genres	*Austroginella* Laseron, 1957 *Alaginella* Laseron, 1957 *Balanetta* Jousseaume, 1875 *Closia* J.E. Gray, 1857 *Hydroginella* Laseron, 1957 *Mesoginella* Laseron, 1957 *Ovaginella* Laseron, 1957 *Protoginella* Laseron, 1957 *Serrata* Jousseaume, 1875 *Serrataginella* G.A. et H.K. Coovert, 1995
TRIBU : Prunini C.A. et H.K. Coovert,, 1995	
Genres	*Prunum* Herrmannsen, 1852 *Bullata* Jousseaume, 1875 *Cryptospira* Hinds, 1844 *Hyalina* Schumacher, 1817 *Rivomarginella* Brandt, 1968 (eau douce) *Volvarina* Hinds, 1844
Marginelloninae Coan,, 1965	
Genres	*Marginnellona* von Martens, 1904 *Afrivoluta* Tomlin, 1947

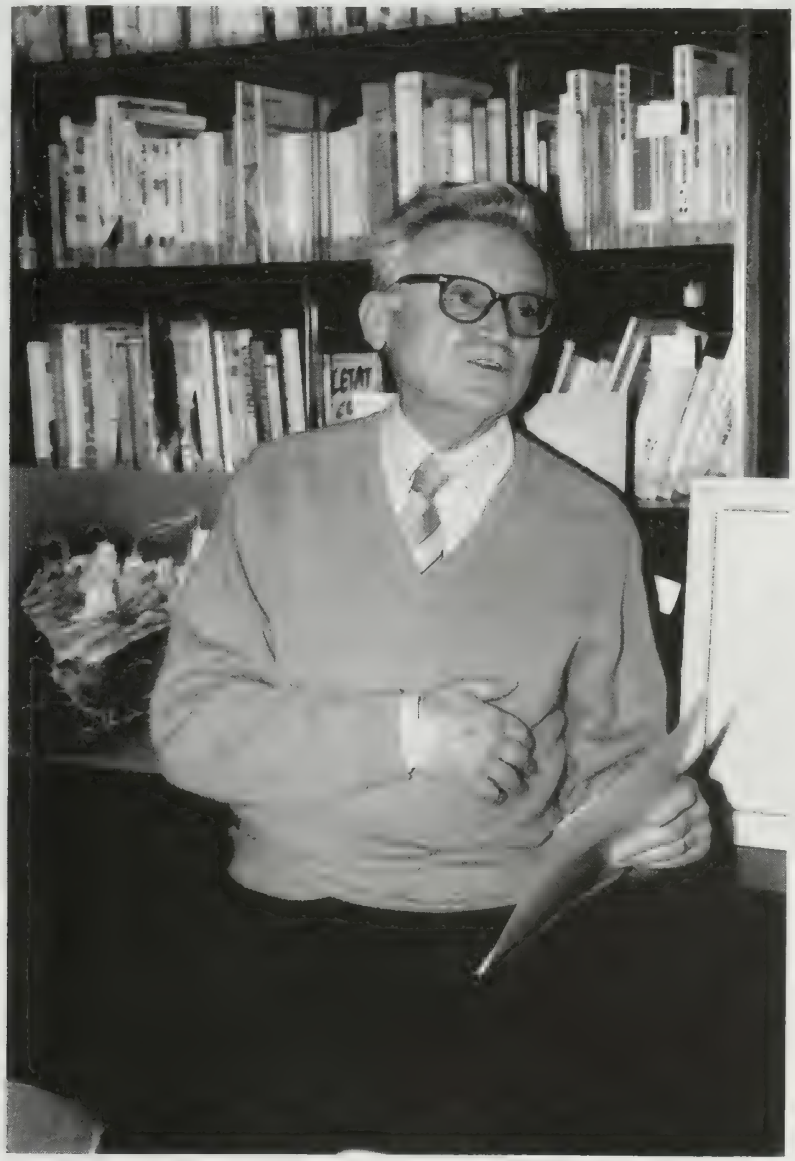
Ces Ccystiscidae étaient représentés par :

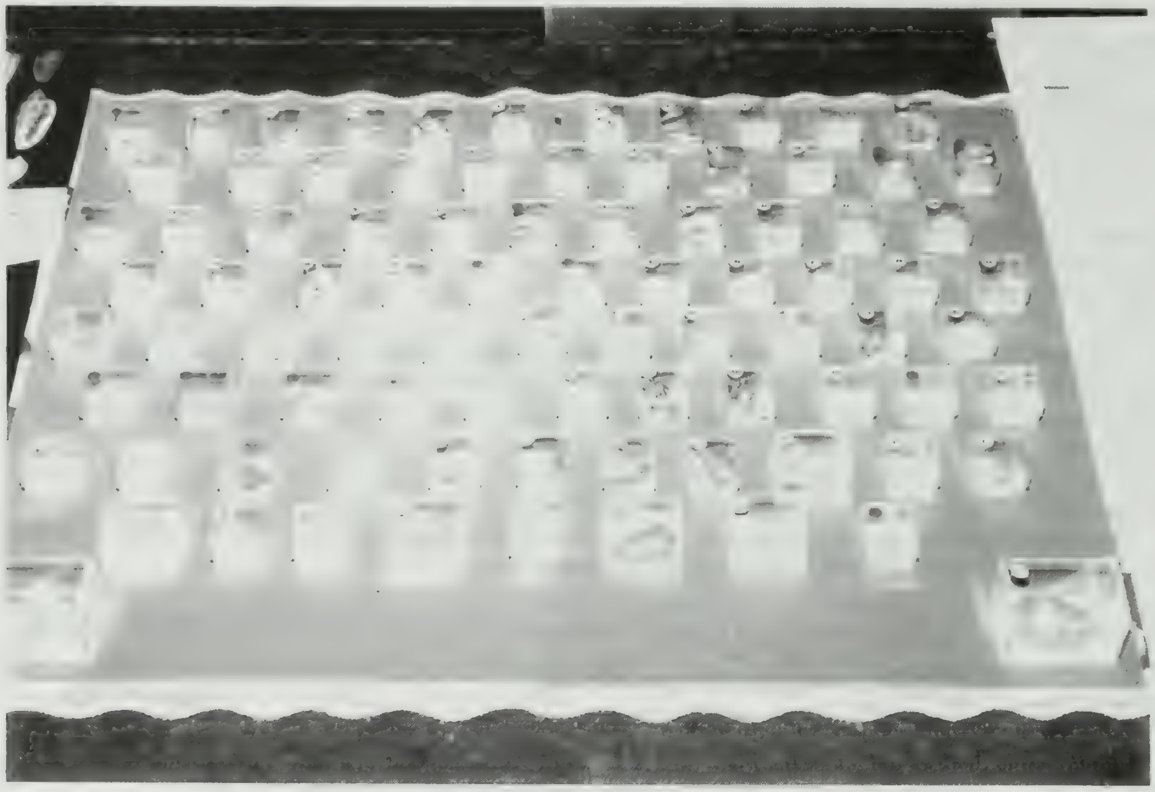
Persicula blanda (Afrique de l'Ouest)
Persicula accola (Panama)
Persicula cingulata (Sénégal)
Persicula imbricata (Mexique)
Persicula persicula (Sénégal)
Persicula avellana (Afrique de l'Ouest)
Persicula pulchella (W. Australia)
Persicula interruptolineata (Vénézuéla)
Gibberula chudeaui (Sénégal)
Granulina occulta (Afrique de l'Ouest)

Les coquilles étaient disposées de manière telle que l'on pouvait repérer les 10 Cystiscidae (marqués d'un point rouge) parmi une centaine de la grande ex-famille. Dans l'ensemble Marginellidae et Cystiscidae confondus, nous avons pu observer des coquilles de tailles diverses allant de 1 mm à 50 mm. La plus grande espèce mesure 150 mm et provient de la mer de Chine (*Marginellona gigas* (von Martens,, 1903)). Le deuxième plus grand spécimen connu de 120 mm se rencontre sur la côte de l'Afrique du Sud (*Afrivoluta pringlei* (Tomlin, 1947)). *Bullata bullata* (Born, 1778) du Brésil (100 mm) est le troisième plus grand.

Une photocopie couleur reproduisait les 10 nouvelles espèces attribuées à 5 genres différents du niveau bathyal de Nouvelle Calédonie, décrites récemment par Franck Boyer.

Nous savons que la plupart de ces animaux se nourrissent surtout d'autres mollusques. Quelques espèces peuvent percer la coquille d'autres bêtes puis aspirer à l'aide de leur trompe le tissu de leur victime par l'orifice qu'elles ont créé.





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Rendez-vous à l'année prochaine – EXPO will return …

Une récolte éclair en Espagne

Etienne MEULEMAN

La plage de Vilanova ila geltrú, à une quarantaine de kilomètres de Barcelone, ne s'attendait certainement pas à voir débarquer, un 19 décembre en fin d'après-midi, un collectionneur de coquillages. En effet, les coquilles rejetées sur la plage n'ont pas eu le temps de se cacher.

Quel bonheur, après une journée de dur labeur de se retrouver sur la plage au coucher du soleil ! Le bonheur est d'autant plus grand lorsque celle-ci est remplie de coquilles (photo 1). Sur une heure de temps quelques 35 espèces différentes récoltées. Il suffisait de se baisser pour remplir son sac de trésors fraîchement rejetés.

La récolte a commencé lorsque j'ai buté contre une natice, *Naticarius cruentatus* (Martyn, 1784). Vu le temps dont je disposais, j'aurais déjà été heureux de ne trouver que cette coquille. Mais plus je me rapprochais de la mer, plus les coquilles étaient nombreuses, un Murex à gauche, une Telline à droite, une Natice, deux Natices, trois Natices, dix Natices, je n'en croyais pas mes yeux.

Même les Bernard-l'ermite étonnés ont accepté de poser pour la photo (photo 2).

La récolte s'est terminée lorsque le soleil s'est caché et que la lumière ne me permettait plus de distinguer les coquilles sur la plage. Bref, c'est heureux et les poches pleines de coquilles que je suis rentré à l'hôtel.

Le soir en m'endormant, je me suis dit que la nature pouvait nous réserver encore bien des surprises, et qu'il était encore possible de trouver de beaux spécimens pas trop loin de chez soi.

Ci-dessous vous trouverez la liste des espèces récoltées sur la plage :

Gastéropodes

Famille: APORRHAIDAE
Aporrhais pespelecani (Linné, 1758)

Famille: BUCCINIDAE
Buccinulum corneum (Linné, 1758)

Famille: CANCELLARIIDAE
Cancellaria cancellata (Linné, 1767)

Famille: CASSIDAE
Phalium undulatum (Gmelin, 1791)
(coquille abîmée)

Famille: CERITHIIDAE
Cerithium vulgatum (Bruguière, 1792)

Famille: CREPIDULIDAE
Crepidula unguiformis Lamarck, 1822

Famille: MURICIDAE
Bolinus brandaris (Linné, 1758)
Hexaplex trunculus (Linné, 1758)

Famille: NASSARIIDAE
Nassarius mutabilis (Linné, 1758)
Nassarius reticulatus (Linné, 1758)

Famille: NATICIDAE
Naticarius cruentatus (Martyn, 1784)
Naticarius punctatus (Chemnitz in Karsten, 1798)
Neverita josephina Risso, 1826

Famille: PATELLIDAE
Patella caerulea Linné, 1758

Famille: THAIDIDAE
Thais haemastoma (Linné, 1758)
(coquille abîmée)

Famille: TROCHIDAE
Calliostoma zizyphinum (Linné, 1758)
Gibbula magus (Linné, 1767)

Bivalves

Famille: ANOMIIDAE
Anomia ephippium Linné, 1758

Famille: ARCIDAE
Arca noae Linné, 1758

Famille: CARDIIDAE
Acanthocardia tuberculata (Linné, 1758)

Famille: CARDITIDAE
Cardites antiquata (Linné, 1758)

Famille: GLYCYMERIDIDAE
Glycymeris insurbica (Brocchi, 1814)

Famille: MACTRIDAE
Mactra stultorum (Linné , 1758)

Famille: MYTILIDAE
Mytilus edulis Linné, 1758

Famille: OSTREIDAE
Ostrea edulis Linné, 1758

Famille PECTINIDAE
Pecten jacobeus (Linné, 1758)
(des valves isolées)

Famille SPONDYLIDAE
Spondylus gaederopus Linné, 1758
(des valves isolées)
Famille TELLINIDAE
Tellina planata Linné, 1758
Tellina nitida Poli, 1795

Famille: VENERIDAE
Callista chione (Linné, 1758)
Dosinia lupinus (Linné, 1758)

Coquilles terrestres

(aux abords de l'hôtel)
Famille: SUBULINIDAE
Rumina decollata (Linné, 1758)

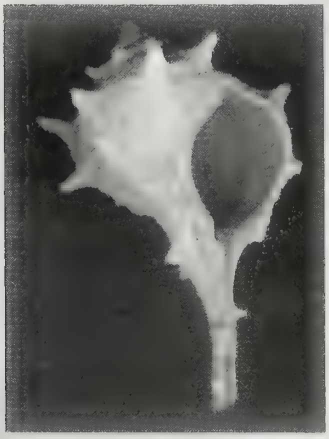
Famille: HELICIDAE
Theba pisana (Müller, 1774)
Cernuella virgata (da Costa, 1778)
Eobania vermiculata (Müller, 1774)

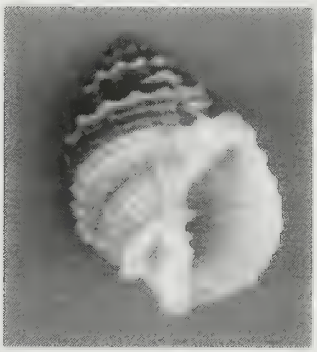
Photo n° 1 : La plage de Vilanova ila Geltrú au coucher du soleil.

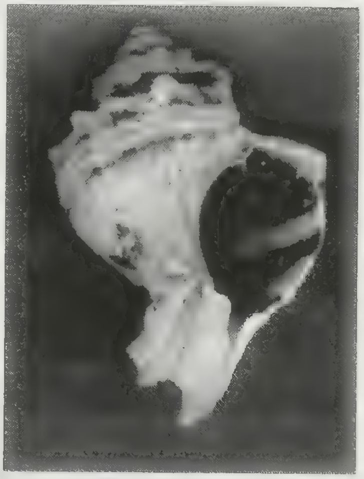
Photo N° 2 : Un Bernard-l'ermite dans *Bolinus brandaris* (Linné, 1758) qui a accepté de poser pour la photo.

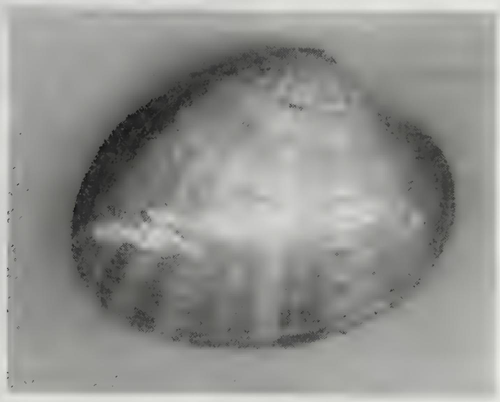
Quelques espèces récoltées sur la plage:

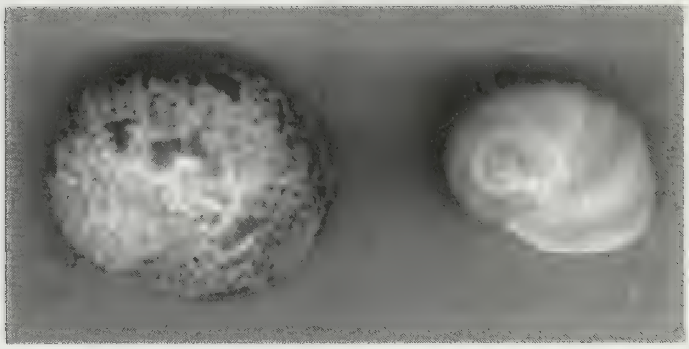
En haut à gauche: *Bolinus brandaris* (Linné, 1758)
En haut au centre : *Cancellaria cancellata* (Linné, 1767)
En haut à droite : *Hexaplex trunculus* (Linné, 1758)
En bas à gauche: *Callista chione* (Linné, 1758)
En bas à droite: *Naticarius punctatus* (Chemnitz in Karsten, 1798) et *Neverita josephina* Risso, 1826

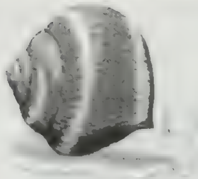








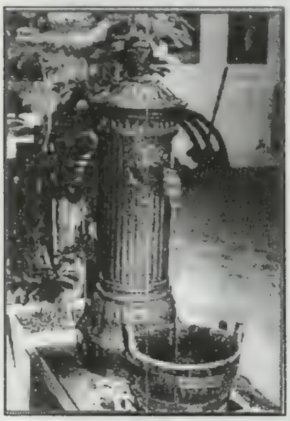




Quoi de neuf ?

Roland HOUART et Claude VILVENS

EXPOSITION DE LA SOCIÉTÉ BELGE DE MALACOLOGIE A GENVAL



En octobre 2001 nous avons reçu une demande du responsable du Musée de l'Eau et de la Fontaine à Genval en vue d'organiser une **exposition de coquillages** au sein de leur week-end "**fête de l'eau**" les 29, 30, 31 mars et 1er avril 2002.
Leur exposition/animation rassemblera, dans le cadre et le prolongement de la **Journée Mondiale de l'Eau** (le WE des 23 et 24 mars) des associations ayant des projets liés à l'eau, des spécialistes du domaine de l'eau, des animations sur le thème de l'eau, des expositions et des stands sur les activités culturelles ou ludiques liées à l'eau (plongée, maquettisme, malacologie, etc.)

Nous serons présents les deux week-end, soit:
- Journée mondiale de l'Eau: WE des 23 et 24 mars de 10 à 18 heures
- Fête de l'Eau: (WE de Pâques), les 30, 31 mars et le 1er avril, également de 10 à 18 heures

Nous y exposerons diverses jolies pièces et des vitrines contenant les mollusques d'eau douce de Belgique, les mollusques d'eau douce du lac Moero, des coquillages exotiques, etc. D'autres réalisations tels des panneaux didactiques y seront aussi présentées
M. et Mme Senders y exposeront également des photographies sous-marines.
La Société Belge de Malacologie aura son stand (pas très loin de l'entrée) avec une permanence assurée au moins durant le week-end de Pâques.
Soyez nombreux à venir nous rendre une petite visite!
Situé dans un environnement pittoresque, près du lac de Genval, le Musée de l'Eau et de la Fontaine vaut vraiment le détour!
ENTRÉE: adultes: 3.00 €; enfants de 6 à 12 ans: 1,50 €; moins de 6 ans: gratuit.

Voies d'accès: **VOIE FERREE**
Ligne Ottignies-Louvain-La-Neuve-Bruxelles
Ligne Bruxelles-Ottignies-Louvain-La-Neuve
Descendre à la gare de Genval

RESEAU ROUTIER: notamment E411
De Bruxelles
sortie n° 3 Genval-Terhulpen-Overijse (ou)
sortie n° 4 Rosières
De Namur
sortie n° 4 Rosières (ou)
sortie n° 5 rixensart-Bierges
Suivre les indications "Lac de Genval" ou "Musée de l'Eau et de la Fontaine"

Musée de l'Eau et de la Fontaine
Avenue Hoover, 63 – B-1332 Genval – Belgique
www.pixelsbw.com/musee-eau-fontaine
(Ouvert les week-ends et jours fériés de 10h à 18h
ou sur rendez-vous en semaine (02/654.19.23))

Quelques nouvelles publications

Roland HOUART

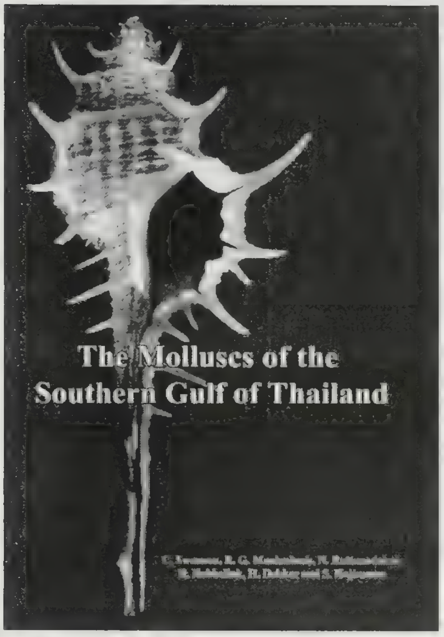
1. Quelques livres

THE MOLLUSCS OF THE SOUTHERN GULF OF THAILAND

par G. Swennen, R.G. Moolenbeek, N. Ruttanadakul, H. Hobbelinck, H. Dekker & S. Hajisamae

pp. i-ix, 1-210, 530 figures (photographies en couleur)
Prix: 25 USD (couverture souple);
40 USD (couverture cartonnée).

Publié et distribué par "the Biodiversity Research and Training Program (BRT)", Bangkok, Thailande.



Encore un livre en plus me direz-vous, oui mais… un conseil, découvrez-le vite, il en vaut la peine.

L'introduction comprend plusieurs chapitres très intéressants telle l'exploration de la région étudiée, une vue d'ensemble des mollusques locaux et de leurs habitats, les espèces introduites récemment, la systématique (taxonomie et nomenclature, classification, etc.), écologie et historique (locomotion, nourriture, croissance, couleur…), les mollusques et les humains. Les premières figures du livre nous montrent une carte de la région explorée, des pontes et diverses photos tirées de la vie locale en rapport direct avec les mollusques et les coquillages.

Les auteurs nous emmènent ensuite vers les divers sites, ils nous décrivent aussi les différentes façons de nettoyer, d'étiqueter, de récolter et d'identifier des mollusques et d'entreposer une collection. La partie systématique débute par une liste des espèces, chacune d'elle est ensuite décrite: genre, espèce, auteur(s), date de description, courte diagnose et distribution dans la région explorée. Quarante-quatre planches couleurs de très bonnes qualité illustrant polyplacophores, bivalves, dentales, céphalopodes, gastéropodes précèdent un glossaire et l'index final.

Sans hésitation, c'est un livre que je conseille à tous nos membres ! Les descriptions sont explicites, les photos sont très bonnes et… le prix du livre très démocratique. A acheter immédiatement pour inclure dans toute bonne bibliothèque.

A CONCHOLOGICAL ICONOGRAPHY

1. A Taxonomic Introduction to the Recent VOLUTIDAE

par Patrice Bail et Guido T. Poppe

2. Genus *Amoria*

par Patrice Bail et Allan Limpus

Publié et distribué par ConchBooks
Mainzer Str. 25, D-55546 Hackenheim, Allemagne.
conchbooks@conchbooks.de

Tout le monde connaît à présent cette série fabuleuse qui petit à petit s'agrandit pour, on l'espère, former une série de monographies absolument indispensables à toute bibliothèque.

Les derniers nés sont écris par des professionnels en la matière. Texte, dessins et photographies (couleur évidemment) sont à la hauteur de ce que l'on attend de ces spécialistes: du beau, du bon et de l'indispensable.

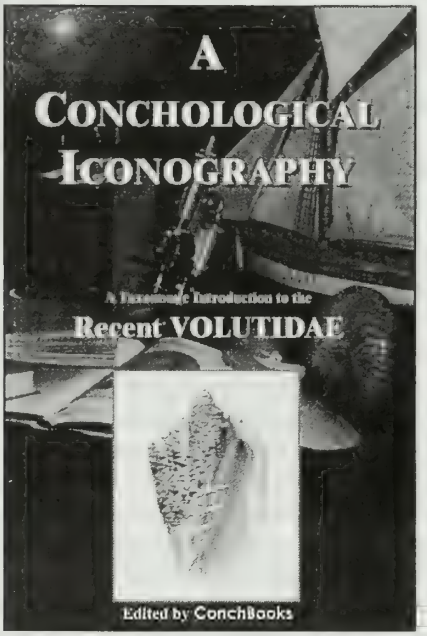
"A taxonomic introduction of Volutidae" nous conduit vers une vue d'ensemble de la famille et des différents genres. Chaque (sous)genre est briévement décrit et est accompagné de la liste des espèces. Les espèces types sont indiquées et sont illustrées à l'aide d'excellentes photographies couleurs sur 5 planches.

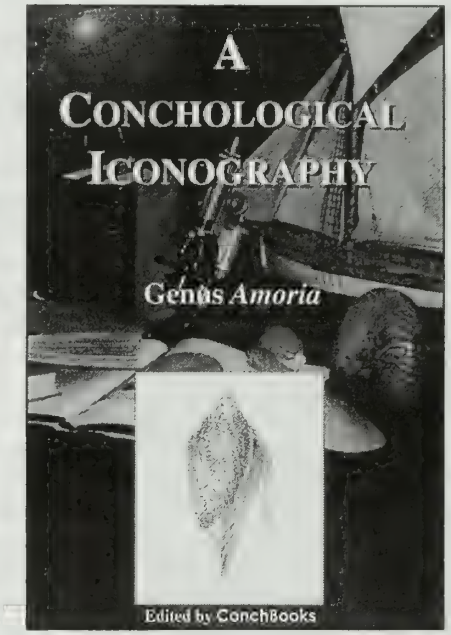
Dans "The genus *Amoria*" par P. Bail et A. Limpus, en guise d'introduction, les auteurs nous brossent d'abord quelques traits importants sur la position systématique, les sous-familles proches, les sous-genres, les fossiles, la distribution et l'habitat, la morphologie de la coquille, et d'autres points.

Chaque espèce est ensuite décrite avec localisation du matériel type, la distribution géographique, l'habitat et quelques remarques. Chaque description est accompagnée d'une photographie noir et blanc de l'espèce et de la localisation de l'espèce sur une carte géographique. Le volume se termine par une courte bibliographie, un index et 93 splendides planches couleurs où chaque espèces est illustrées à l'aide de nombreux spécimens, montrant ainsi la variabilité (infinie) des coquilles. Les planches 85 à 93 sont consarées aux photographies de quelques espèces *in situ*.

Les fêtes de fin d'année sont déjà (ou encore) bien lointaines mais il n'est pas toujours nécessaire d'attendre un événement heureux pour s'offrir (ou se faire offrir) LE CADEAU (the must...).

Bonne lecture!





2. Quelques publications

Pour rappel, il s'agit ici de publications ne se trouvant à la bibliothèque de la SBM, mais qu'il est possible de consulter à l'IRSNB et le plus souvent à l'ULB. On peut consulter Roland Houart à ce sujet.

Moluscos del Plioceno Superior Marino de Isla Guafo, Sur De Chile, Parte II. Gastropoda, par D. Frassinetti. *Boletin del Museo Nacional de Historia Natural, Chile,* 49: 131-161 (2000).

L'auteur décrit les gastéropodes marins fossiles de l'Ile Guafo au Sud du Chili. Dix-huit espèces sont recensées dont 8 nouvelles: *Trophon covacevichi, T. huilliche, T. parcus, T. vetulus, Phos chilensis, Penion crassus, Penion diversum* et *Adelomelon reconditus.*

⁂

Catalog of Recent type specimens in the division of invertebrate zoology, American Museum of Natural History. V. Mollusca, Part 2 (class Gastropoda [exclusive of Opisthobranchia and pulmonata], with supplements to Gastropoda [Opisthobranchia], and Bivalvia). *Bulletin of the American Museum of Natural History*, n° 262, 2001.

Je pense utile de reproduire ici le résumé:

A complete, annotated listing of all primary and secondary type specimens of gastropod mollusks (exclusive of opisthobranchs and pulmonates) in the collection of the Division of Invertebrate Zoology at the American Museum of Natural History (AMNH) (as of December 31, 1999) is presented. Supplementary listings for bivalves and opisthobranch gastropods (previously covered in Part 1) are also given. This catalog includes 1309 type lots, 18 lectotype designations, and illustrations for 12 previously inadequately illustrated type specimens and five species never before illustrated. New synonymy information is given for nine species, one species is shown to be a valid name, one new replacement name is introduced, and one neotype is suppressed with rediscovery of type material. An appendix of AMNH specimens previously incorrectly cited as types is also given. An index of genera and species is included for each class and subclass.

❧

Contribution to the marine molluscan fauna of Kerguelen Islands, South Indian Ocean, par N. Troncoso, J.L. Van Goethem and J.S. Troncoso. *Iberus* 19 (1): 83-114 (2001).

Résumé original:

The present work contributes to the knowledge of the mollusc fauna of the Kerguelen Is., on the basis of a collection of the Institut Royal des Sciences naturelles de Belgique. This collection include 32 species of gastropods and 12 of bivalves collected in shallow waters of the Morbihan Bay, among the gastropods *Margarites cf. porcellana and Perissodonta mirabilis* are the most abundant, whereas among the bivalves the commonest species are *Gaimardia trapesina and Laternula elliptica.* Most of the species in this collection have a wide distribution, although some species are endemics of Kerguelen Is. or of the Kerguelen-Heard platform and another species circumantartic.

❧

Proceedings of the 10th Congress & Workshop Tropical Marine Mollusc Programme (TMMP). Ministry of Fisheries, Vietnam. Hanoi & Halong Bay 20-30 October 1999. *Phuket Marine Biological Center Special Publication* n° 21: i-xii, 1-316 (part 1), 317-537 (part 2), 539-644 (part 3).

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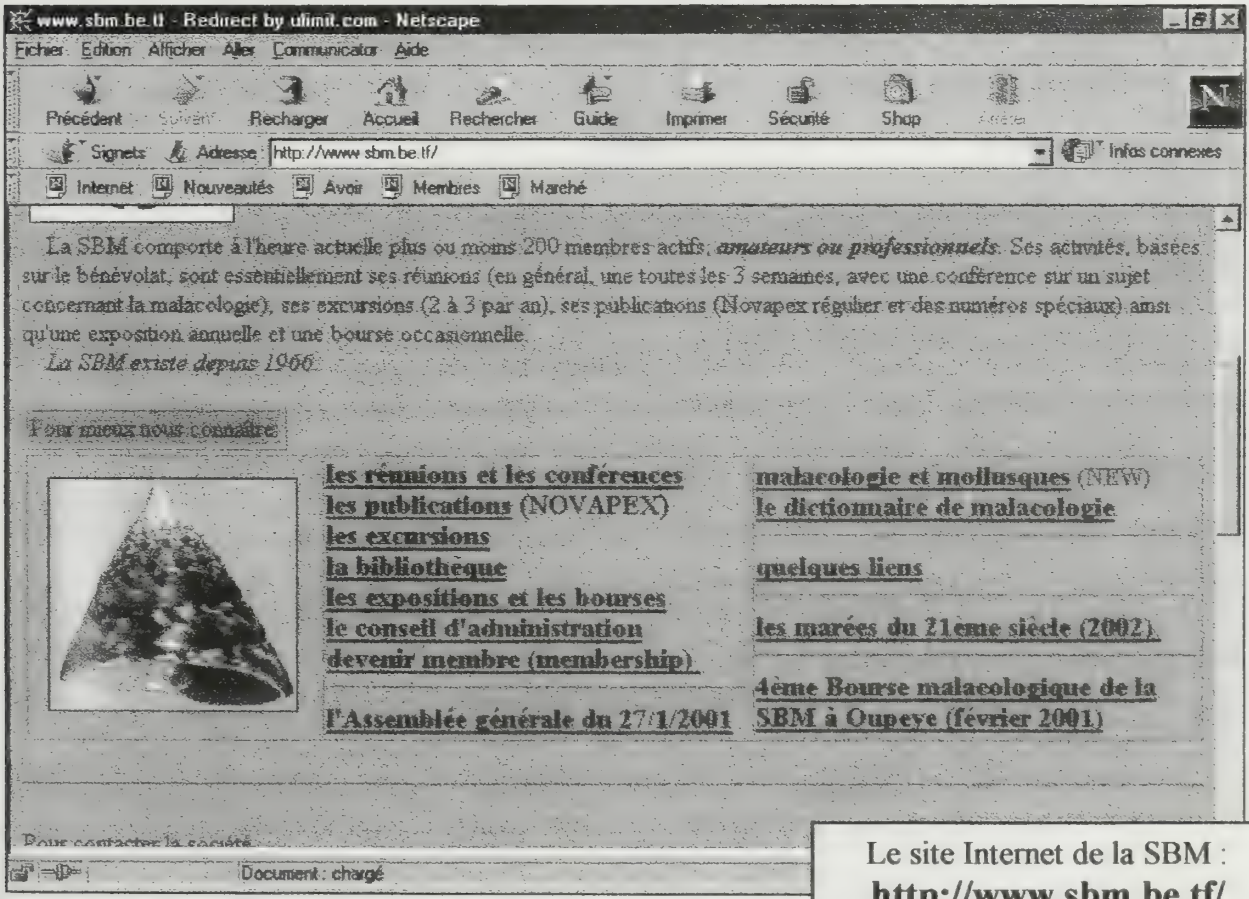
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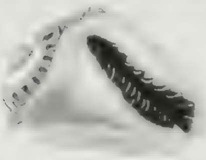

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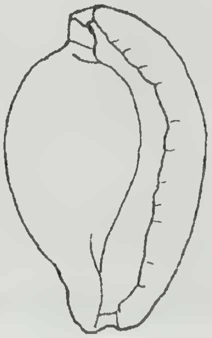

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de la France du Centre-Ouest, du Midi et des Pyrénées

R. Bernasconi

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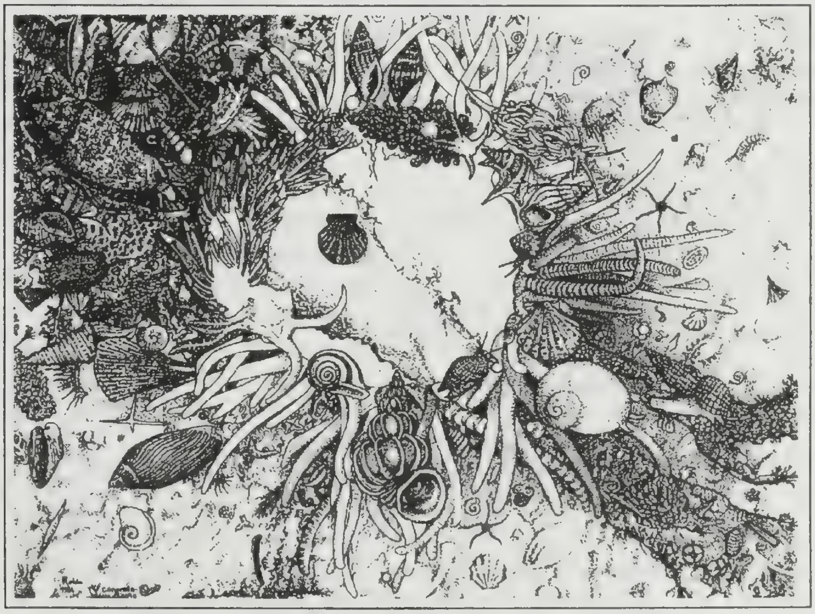

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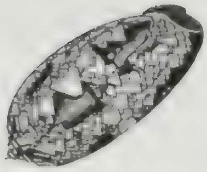


Prochaines activités de la SBM

Claude VILVENS

Lieu de réunion : Médiathèque de l'Institut St Joseph - Rue Félix Hap 14 - 1040 Bruxelles
à partir de 14h. *Sonnez et l'on vous ouvrira !*

SAMEDI 23 MARS 2002
Georges VAUQUELIN et Isabelle VAN LIEFDE : L'Australie Occidentale et le groupe *Zoila* (Cypraeidae)
Notre cycle de conférence nous emmène décidément un peu partout de par le monde (par la pensée seulement, d'accord, mais tout de même ☺ !). Cette fois, ce presque-continent qu'est l'Australie nous est évoquée par notre "docteur es venin de Cônes" – si ce n'est qu'il s'agira de Porcelaines …

***

SAMEDI 20 AVRIL 2002
Jacques et Rita SENDERS : Madagascar
Existe-t-il un coin du monde où nos infatigables globe-trotters n'ont pas posé leurs pieds ? De toute manière, les voici dans cette grande île de l'Océan Indien où tant de richesses malacologiques attendent d'être découvertes.

***

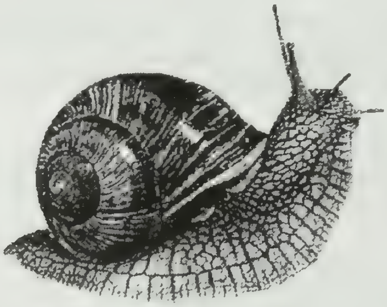
SAMEDI 12 MAI 2002
Claude VILVENS : Les Cantharidini : des Troques mal connus.
"L'homme qui aimait les Trochidae" (je vous laisse deviner ce qu'aime le Président ;-) …) envisage donc de nous parler de Trochidae que les collectionneurs n'affectionnent que modérément à cause de leur (relative) petite taille : les *Cantharidus*, *Jujubinus*, *Phasianotrochus* et autres *Thalotia*.

***

SAMEDI 8 JUIN 2002
L'excursion de la SBM.
Où allons-nous aller cette fois ? Aucune idée pour l'instant ! Nos équipes de reconnaissance (=Claude et Etienne) vont le déterminer au retour du printemps. Comme d'habitude, le plus simple est de contacter quelques jours auparavant soit Claude (cvilvens@prov-liege.be ou 04/248.32.25), soit Roland (Roland.Houart@skynet.be ou 016/78.86.16). Quoi qu'il en soit, emportez votre bonne humeur … et prévoyez aussi bottes et vêtements de pluie (au cas, totalement improbable, où il pleuvrait légèrement ;-) …).

***

SAMEDI 22 JUIN 2002
Etienne MEULEMAN : **Hommes et coquillages**
Nous savons que ce thème passionne Etienne (et il n'y a pas que lui !). Il nous propose ici une fabuleuse histoire à travers l'espace et le temps. Voici la 1ère partie : **coquillages et monnaies**.



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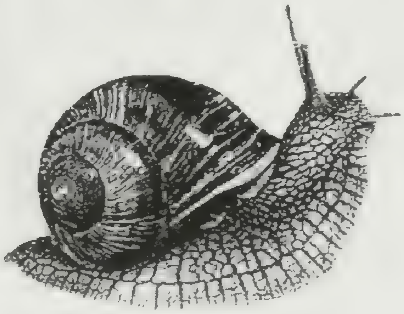

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SOCIETE BELGE DE MALACOLOGIE

Three new deepwater species of Eulimidae (Caenogastropoda) from Brazil

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KEY WORDS. Eulimidae, *Annulobalcis procera* n.sp., *Batheulima lutescens* n. sp., *Batheulima epixantha* n.sp., Brazil, deepwater.

ABSTRACT. Three new deepwater species are described, belonging to the family Eulimidae, based on shells collected in the Marion-Dufresne expedition and Revizee in southeast coast of Brazil. *Annulobalcis procera* sp. n. has the shell longer and slenderer than the remainder congeners and is the second described species of the genus for the South Atlantic. The other 2 species belong to genus *Batheulima*, both have characteristic yellow band in each whorl and are the first record of the genus to the south Atlantic. *B. lutescens* sp. n. is larger, and has a longer aperture and thinner inner lip than *B. epixantha* sp. n.

INTRODUCTION

The MD-55 expedition performed by the R. V. *Marion-Dufresne* in 1987, dredged in the southeast coast of Brazil, and collected several deep-water molluscs, most of them still undescribed. In the present paper, 2 new species of Eulimidae (Caenogastropoda) are described based on shells collected in depths of more than 600 m. The third species was collected by two Brazilian projects, which also have collected several undescribed species in the southeastern coast, as following. The **Revizee** project, "Programa de Avaliação do Potencial Sustentável de Recursos Vivos na Zona Econômica Exclusiva"; and the **PADCT** project, "Importância e Caracterização da Quebra de Plataforma Continental para Recursos Vivos e Não Vivos".

The Eulimidae are parasitic on echinoderms. Warén (1983) reviewed its genera, and this systematic arrangement is adopted herein.

The genus *Annulobalcis* Habe, 1965, encompasses 5 species: *A. shimazui* Habe, 1965 (type species from Japan); *A. yamomotoi* Habe, 1974 (also from Japan); *A. marshalli* Warén, 1981 (from New Zealand); *A. ptilocrinicola* (Bartsch, 1907) (from British Columbia); and *A. aurisflamma* Simone & Martins, 1995 (from Brazil). The latter is the only species described for the Atlantic Ocean, and of which the anatomy is known. The members of the genus *Annulobalcis* have been found to be ectoparasites of crinoids.

The genus *Batheulima* Nordsieck, 1968, has been described for *B. fuscoapicata* (Jeffreys, 1884) (Bouchet & Warén, 1986), from Portugal, and was reported for deep waters. The host of *Batheulima* species is still unknown.

The Marion-Dufresne material is deposited at the mollusk collection of the Musée National d'Histoire Naturelle of Paris, France (**MNHN**), while Revizee and PADCT material is deposited the Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (**MZSP**). Except for some paratypes, that were distributed among these. Comparison with shell photo of Dall's type specimen was possible under courtesy of the National Museu of Natural History, Smithsonian Institution (**USNM**).

SYSTEMATICS

Annulobalcis procera, sp. nov.

Figs. 1-4

Type material. Holotype. MNHN, shell.
Paratypes. MZSP 34512 + 34513, 2 shells from type locality. BRAZIL; São Paulo; off São Sebastião Island, 23°47'S 42°10'W, 610 m depth, 3 shells (MD55, sta. CB105, Bouchet, Leal & Métivier col., 02/vi/1987).

Type locality. BRAZIL; Espírito Santo; off Conceição da Barra, 19°36'S 38°53'W, 640 m depth (MD55, sta. CB93, Bouchet, Leal & Métivier col., v/1987).

Diagnosis. SE Brazilian deepwater species. Shell long, slender, translucent, white. Aperture long, almost half of spire length.

Description. Shell up to 15 mm, turriform, slender, narrow, pointed (apical angle about 27°), up to 12 weakly convex whorls. Color translucent white, semi-transparent. Protoconch with 2.5 whorls; first whorl flat, remainder whorls narrow, almost of same size. Transition between protoconch and teleoconch

marked by distinct sigmoid, shallow, axial furrow. Spire very long, slender. Suture shallow, but distinct. Shell surface almost smooth, glossy; marked by several extremely thin, somewhat uniform spiral striae; subsutural striae slightly deeper. Axial, shallow furrows sparsely present, apparently randomly distributed. Aperture long, narrow; length almost half of spire length. Inner lip weakly concave; callus somewhat broad, more conspicuous anteriorly, preceding inferior area. Outer lip with sharp edge, middle region slightly projected, and convex. Inferior region somewhat wide, with lip deflected, projected forwards. Columella simple. Umbilicus absent.
Measurements (in mm). Holotype: 14.6 by 4.6; Paratypes (from type locality): MZSP 34512) 13.4 by 4.4; MZSP 34513) 5.8 by 2.4; (from sta. CB105): 7.7 by 2.7.

Distribution. S. E. Brazilian coast, from Espírito Santo to São Paulo.

Habitat. The depth ranges from 610 to 640 m. No information about the host is available.

Etymology. The specific name refers to the elongated aspect of the shell, from Latin *procera*, meaning slender, tall.

***Batheulima lutescens*, sp. nov.**
Figs. 5-8

Type material. Holotype. MNHN, shell.
Paratypes. BRAZIL, (MD55, Bouchet, Leal & Métivier col.). Espírito Santo; off São Mateus, 18°59'S 37°50'W, 637 m depth, 1 shell (sta. CB76). São Paulo; off São Sebastião Island, 23°47'S 42°10'W, 610 m depth, MZSP 34514 + 34515, 2 shells, MNHN, 2 shells (sta. CB105, 02/vi/1987).

Type locality. BRAZIL; Espírito Santo; off Conceição da Barra, 19°36'S 38°53'W, 640 m depth, (MD55 sta. CB93, Bouchet, Leal & Métivier col., v/1987).

Diagnosis. SE Brazilian deepwater species. Shell suture shallow. Color translucent white, with yellow spiral band in middle region of each whorl. Aperture almost half of spire length.

Description. Shell up to 10 mm, turriform, slender, narrow, pointed (apical angle about 22°), up to 14 weakly convex whorls. Color translucent white, with a broad spiral band, yellow, running along middle region of each whorl. Protoconch with 2 whorls, first whorl mamillated, pale brown, remainder whorls narrow, increasing weakly. Transition between protoconch and teleoconch marked by distinct sigmoid, shallow, axial furrow. Spire very long, slender. Suture very shallow, distinctively to weakly marked. Surface almost smooth, glossy; delicately marked by growth lines. Last whorl weakly to distinctively angulated. Aperture long, narrow; length almost half of spire length. Inner lip slightly concave; callus very narrow. Outer lip with sharp edge, middle region slightly projected and convex. Inferior region somewhat wide, with lip deflected, projected anteriorly. Columella simple. Umbilicus absent.
Measurements (in mm). Holotype: 10.0 by 3.2; MNHN (#1) (from type locality): 8.6 by 2.7; MZSP 34514: 10.7 by 3.2; MZSP 34515: 6.8 by 1.9; MNHN (from sta. CB55): 7.8 by 2.5.

Distribution. S. E. Brazilian coast, from Espírito Santo to São Paulo.

Habitat. The depth ranges from 610 to 640 m. No information about the host is available.

Etymology. The specific name refers to the yellowish color of the shell band, from the Latin *lutescens*, meaning yellowish.

***Batheulima epixantha*, sp. nov.**
Figs. 9-12

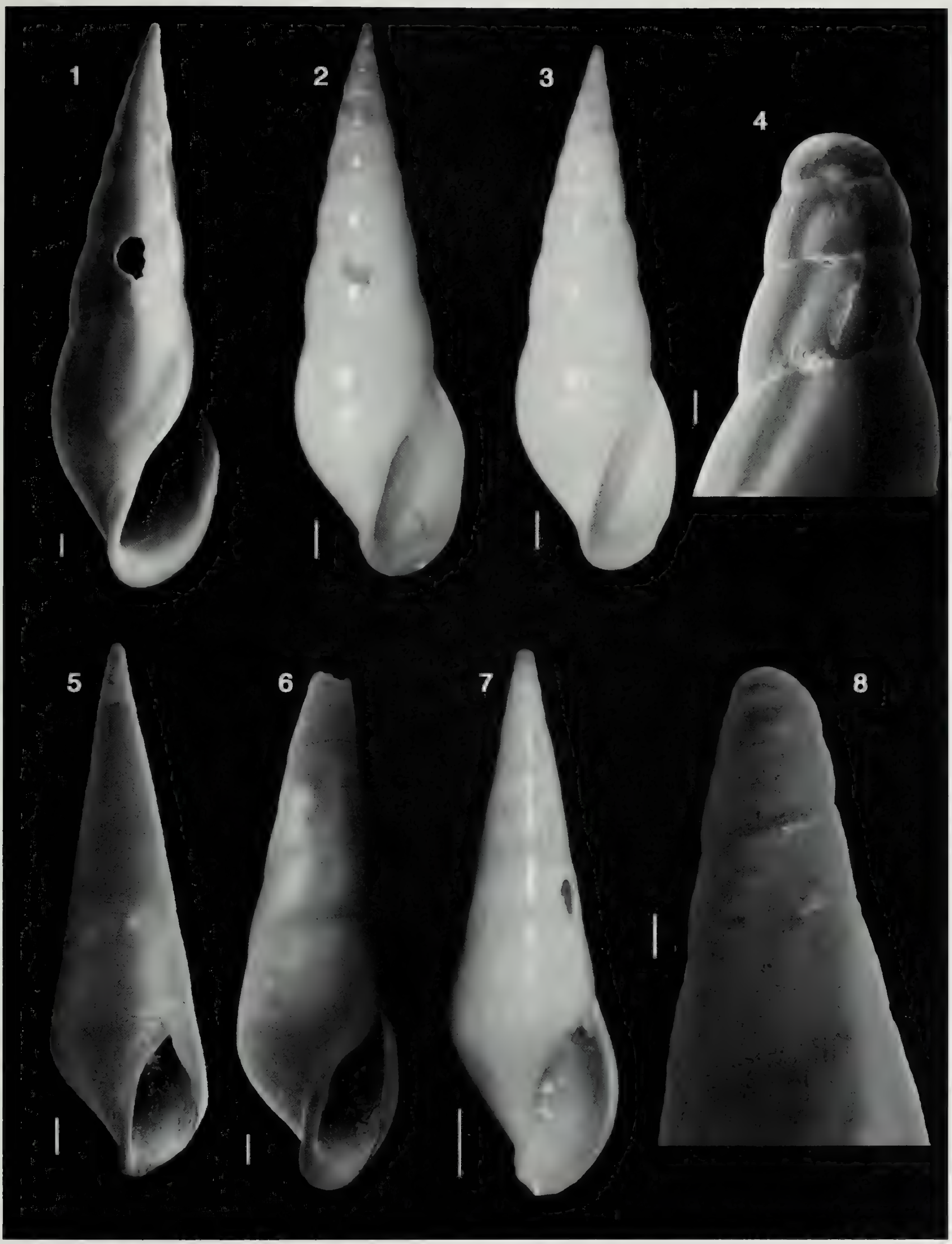
Type material. Holotype. MZSP 34518, shell.
Paratypes. MZSP 34519 + 34520, 2 shells, MNHN, 1 shell (#3), from type locality. BRAZIL; São Paulo, off Ilha de Santo Amaro, 24°17.939'S 44°35.983'W, 133 m depth, MZSP 34516, 1 shell (Sta. 6673, 11/i/1998); off Santos, 24°40.747'S 44°50.822'W, 137 m depth, MZSP 34517, 1 shell (sta. 6677, 12/i/1998).

Type locality. BRAZIL; **Santa Catarina**; off Itajai, 27°10.380'S 47°27.540'W, 129 m depth (sta. 6635, 09/xii/1997).

Diagnosis. S. E. Brazilian deepwater species with shell suture shallow. Color semi-transparent, whitish, with a narrow yellow spiral band in supra-sutural region of each whorl. Aperture almost 1/3 of spire length.

Figures 1-8

1-4. *Annulobalcis procera*. **1**. Holotype, SEM, scale = 0.5 mm **2**. Same, optical photo, scale = 1 mm **3**. Paratype 1 (MZSP 34512), scale= 1 mm **4**. Detail of holotype protoconch, SEM, scale= 50 µm. Figs. **5-8**. *Batheulima lutescens* **5**. Paratype 1, SEM (MNHN, Sta. 105), scale= 0.5 mm **6**. Paratype 2, SEM (same data), scale=0.5 mm **7**. Holotype (MNHN, Sta. 93), scale= 1 mm **8**. Protoconch of paratype 1, SEM, scale = 0.1 mm.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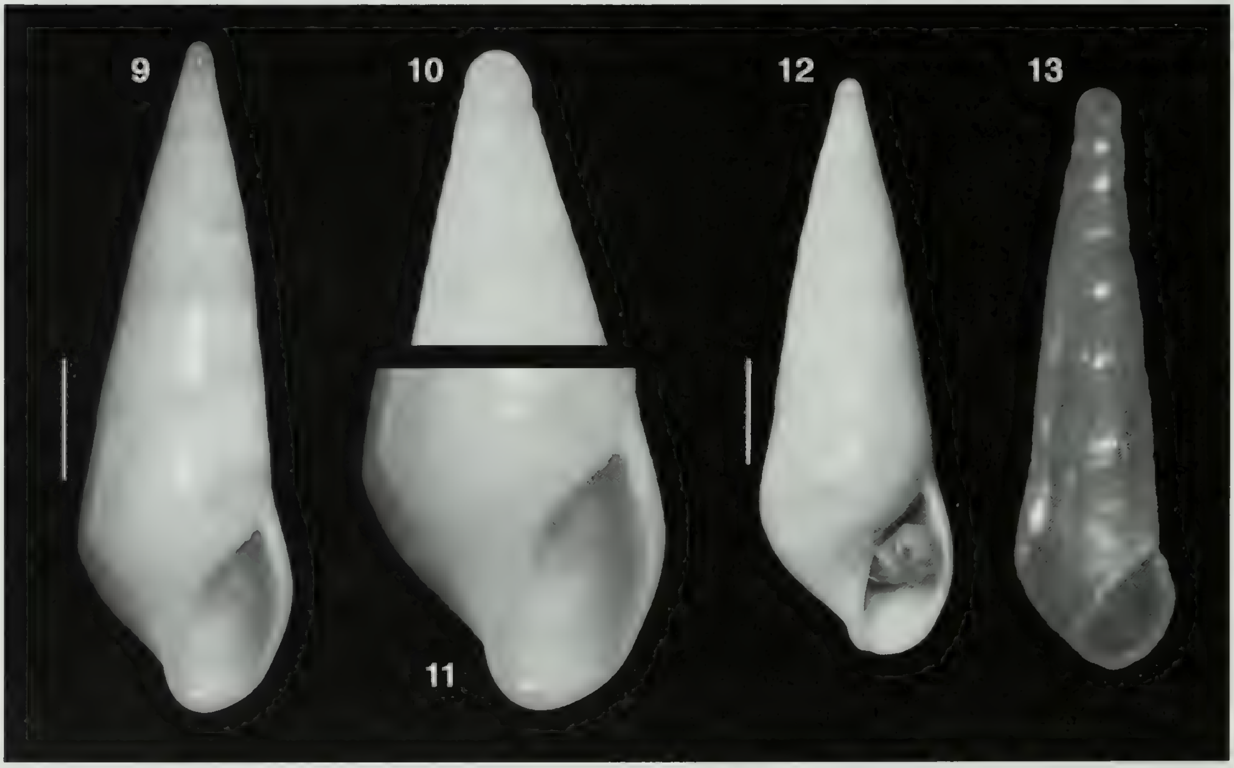
Description. Shell up to 7 mm, turriform, slender, narrow, pointed (apical angle about 26°), up to 11 weakly convex whorls. Color translucent white, with narrow yellow spiral band, running along suprasutural region of each whorl. Protoconch with 2 whorls, first whorl mamillated, pale brown, remainder whorls narrow, increasing weakly. Transition between protoconch and teleoconch marked by distinct sigmoid, shallow, axial furrow. Spire very long, slender. Suture very shallow, distinctively to weakly marked. Surface almost smooth, glossy; marked only by delicate growth lines. Last whorl weakly to distinctively angulated. Aperture moderately long, length almost 1/3 of spire length. Inner lip slightly concave; callus somewhat broad. Outer lip with sharp edge, middle region slightly projected and convex. Inferior region rounded, with lip not deflected. Columella simple. Umbilicus absent.

Measurements (in mm). Holotype: 5.7 by 1.7; Paratypes (from type locality): MZSP 34519: 6.6 by 1.8; MZSP 34520: 3.5 by 1.2; MNHN (from type locality): 3.6 by 1.2.

Distribution. S. E. Brazilian coast, from São Paulo to Santa Catarina.

Habitat. The depth ranges from 129 to 137 m. No information about the host is available.

Etymology. The specific name refers to the yellowish color of the shell band, from the Greek *epixantha*, meaning part yellow.



Figures 9-13

9-12. *Batheulima epixantha*. **9-11**. Holotype **9**. Frontal view **10**. Detail of apex **11**. Detail of the aperture **12**. Paratype (MZSP 34519). Scales = 1 mm **13**. *Strombiformis elata* Dall, 1927, type USNM 108381, courtesy USNM, length 8 mm.

DISCUSSION

The three species described here differ from any Brazilian species of eulimid (Rios, 1994), except *Annulobalcis aurisflamma*, in having well marked suture. Most eulimids from this region have the suture in a straight profile.

Annulobalcis procera shell differs from remainder congeners in being longer and narrower. Additionally, it differs from *A. aurisflamma* in being less transparent (maybe an artifact in being dead collected), in having a shorter aperture (almost half of spire length, while *A. aurisflamma* has the aperture length only slightly shorter than the spire), and more spiral striae. The depth where they occur are also very different, as *A. procera* was collected at a depth of more than 600 m, while *A. aurisflamma* occurs from the intertidal zone to 8 m depth.

Batheulima lutescens and *B. epixantha* were assigned to this genus due to their similarity with the type species, the Northern Atlantic *B. fuscoapicata*, in characters such as the shell and aperture shape, impressed suture, and the darker protoconch. They differ from the type species in having a longer aperture (from almost half to 1/3 of spire length, while *B. fuscoapicata* has aperture length with about 1/4 of the spire), and by the color. *B. epixantha* differs from *B. lutescens* by being smaller (around 6 mm, while *B. lutescens* reaches more than 10 mm), the color pattern (the yellow spiral band is narrower and situated in the supra-sutural region of each whorl, while *B. lutescens* has the band broader, situated in the middle region of each whorl). Also, the aperture of *B. epixantha* is shorter (about 1/3 of spire length, while *B. lutescens* the aperture is about half of spire length), has thicker lip, the inner lip has a broader callus, and the anterior (siphonal) region is simpler and blunter (while this region of *B. lutescens* is clearly projected forwards). The outline looks different, *B. epixantha* is broader, with spire angle of about 26°, while *B. lutescens* is sharper pointed, with spiral angle of about 22°. The depth of occurrence appears to be also different, as *B. epixantha* occurs at about 130 m and *B. lutescens* about 600 m deep.

B. lutescens resembles *Strombiformis patula* (Dall & Simpson, 1901), differ in having less projected outer lip, shorter aperture and pointed apex<. *B. lutescens* also resembles *Strombiformis fusus* (Dall, 1889), differs in having broader aperture, wider spire and broader protoconch. The three species described here differ from those eulimids described by Dall (1927) and Watson (1886), mostly by well marked suture. The single which can be confused is *Strombiformis elata* Dall (Fig. 13), from which the species here described differ in having the aperture proportionally longer, broader outline, apex more pointed, and in being larger.

ACKNOWLEDGMENTS

The material collected by the Marion-Dufresne expedition was sent for this study as courtesy of Dr. Philippe Bouchet and Philippe Maestrati, at the MNHN. The Revizee material was sent for study by Dr. Cintia Miyaji, IOUSP (Instituto Oceanográfico da Universidade de São Paulo) and Dr. Antonia Cecília Amaral, UNICAMP (Universidade de Campinas), who send the material of the south regional sub-committee. The photo of the *Strombiformis elata* type was courtesy of Tyjuana Nickens and Dr. M.G. Harasewych, from USNM. The Revizee project is supported by "Ministério do Meio Ambiente, dos Recursos Hídricos e da Amazônia Legal" (MMA), "Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis" (IBAMA), "Comissão Interministerial para os Recursos do Mar" (CIRM) and "Programa de Apoio ao Desenvolvimento Científico e Tecnológico" (CNPq). The PADCT material was responsibility of Dr. Cintia Miyaji and Dr. Airton Tararam, IOUSP. For Paulino José S. Souza Jr. for reviewing the manuscript. For Lara M. Guimarães for helping the SEM studies. This project is carried on by the CNPq, and is performed by the IOUSP. This study is part of a project developed under a support of Fapesp, Fundação de Amparo a Pesquisa do Estado de São Paulo (procs. # 00/11074-5 and #00/11357-7).

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Description of *Zetela alphonsi* n.sp. (Gastropoda: Trochidae: Solariellinae) from Chile

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KEYWORDS. Gastropoda, Trochidae, Chile, *Zetela alphonsi* n. sp.

ABSTRACT. *Zetela alphonsi* n. sp. is described and compared with similar *Solariella*-like species from deep waters around the world.

RESUME. *Zetela alphonsi* n. sp. est décrite et comparée avec des espèces analogues à l'aspect de type *Solariella* et provenant d'eaux profondes du monde entier.

INTRODUCTION

A few month ago, once again, Guido T. Poppe, well known shell collector from Belgium, entrusted me with shells from deep water off Chile. This reminded me that Trochidae from this area are relatively poorly known and seldom well illustrated. Especially, only a few authors seem to have studied the trochids from off Chile and, in this group, it seems a bit easier to find numerous data and illustrations about shells from the magellanic province (Dell, 1971, 1990; Forcelli, 2000) as to get some information about species from central (Rehder, 1971; Mc Lean & Andrade, 1982) and north Chile (Santa Maria, 1982). In this later case, it is often necessary to look for papers talking about neighbouring areas, like Peru or Galapagos Islands (Dall, 1919; Keen, 1971; Finet, 1995).
Nevertheless, the peculiar shape of the shells that initiated this paper, obviously Solariella-like, is very striking and reminds only weakly any known species from this area and belonging to this group of trochids. After further studies, it appears these shells belong to a species different from all described species..

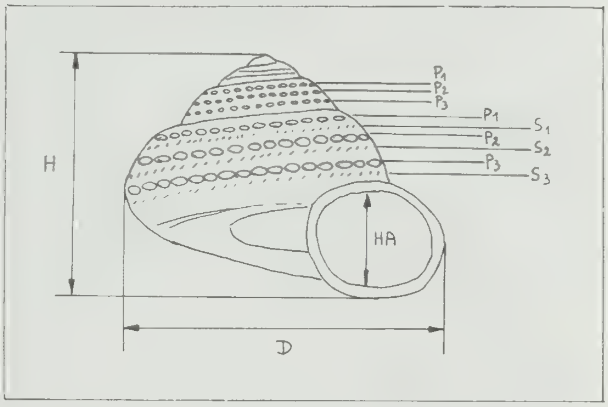
Abbreviations

Repository

IRSNB : Institut royal des Sciences naturelles de Belgique, Bruxelles.
MNHN : Muséum national d'Histoire naturelle, Paris.

Other abbreviations (Text Fig.)

D : diameter
H : height
HA : height of aperture
P1, P2, P3, ... : primary cords (P1 is the most adapical)
S1, S2, S3, ... : secondary cords (S1 is the most adapical)
lv : live-taken specimens present in sample



SYSTEMATICS

Family: **TROCHIDAE** Rafinesque, 1815
Subfamily : **SOLARIELLINAE** Powell, 1951
Genus: ***Zetela*** Finlay, 1927
Type species: *Minolia textilis* Murdoch & Suter, 1906 (by original designation) - Recent, New Zealand.

Zetela alphonsi n.sp.

Figs 2-6

Type material. Chile, off Chiloé, trawled in 800 m on muddy bottoms, holotype MNHN, 15.5 x 11.9 mm (lv); paratype IRSNB, 11.5 x 9.8 mm (lv); paratype, 10.0 x 8.8 mm (lv), author's collection; paratype, 8.3 x 7.7 mm (lv), collection G.T. Poppe*.

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* Stanislas Leclefstraat, 8, 2600, Berchem, Belgium.

Other material. Chile, off Taltal, Antofagasta, trawled in 900-1000 m on muddy bottoms, 2 lv, coll. G.T. Poppe.

Diagnosis. A *Solariella*-like species, green irridescent, with a wide umbilicus, conspicuous tubular and shouldered whorls bearing three spiral cords and strong axial ribs.

Description. *Shell* rather large for the genus (height up to 15.5 mm, width up to 11.9 mm), higher than wide, thin, scalariform; spire high, 2x to 3.8x higher than aperture, widely umbilicate.

Protoconch of about 1.5 whorl (first whorl damaged in all specimens examined), sculptured by granules and a thick abapical spiral cord; apical fold rounded.

Teleoconch up to 4.5 convex tubular whorls, bearing spiral cords and prosocline threads, with one subsutural shoulder. Suture visible, slightly canaliculated.

First teleoconch whorl convex, sculptured by 2 granular primary cords and strong prosocline ribs, producing axially elongated nodules at intersections; P1 and P2 similar in size and shape, evenly distributed on whorl; number of axial ribs of about 25. Subsequent whorls with sutural ramp with rounded rim, gently sloping on second whorl, becoming almost horizontal on last whorl and producing obvious shoulder at first quarter. On second whorl, P3 appearing near suture, weaker than P1 and P2. On third whorl, P3 staying weaker than others; axial ribs becoming slightly finer and more numerous by intercalation, producing therefore smaller granules. On last whorl, axial ribs evanescent; very weak secondary spiral cords S1 and S2 appearing between P2 and P3.

Aperture subcircular, lip thin at rim; peristome complete in fully adults specimens; outer lip with weak angulations corresponding to external spiral cords; inner lip meeting outer lip at a strong basal angulation.

Base convex, sculptured as last whorl, with 3 or 4 spiral cords, cord around umbilical area strongest; crowded axial riblets, weakly lamellose, producing weak nodules at intersections with spiral cords. Umbilicus very wide, funnel-shaped, with angulate rim bordered with most internal spiral cord of base; wall convex; sculptured within by fine axial threads, occasionally (paratype 2) by 1 granular spiral cord near rim.

Colour of protoconch and first whorl of teleoconch dark green, subsequent whorls light green irridescentaperture nacreous within.

Operculum horny, multispiral, with short growing edge and about 12 volutions.

Discussion. The new species belongs undoubtely to the subfamily Solariellinae. The genus *Lamellitrochus* Quinn, 1991 could be a right choice for it, but I follow Marshall (1999) who state, based on conchological and anatomical arguments, that this genus is a junior synonym of *Zetela* Finlay, 1927.

The peculiar shape of *Zetela alphonsi* n.sp. implies that it can hardly be confused with another known species from Chile.

The description of the new species remember nevertheless *Calliotropis illota* (Watson, 1886) (Fig 1) from South Chile and Patagonia, but this species has a spire less elevated without distinct shoulder, bears 4 spiral cords instead of 3 with nodules horizontally, not axially, elongated (*fide* original description).

Zetela alphonsi n.sp. may be compared to *Calliotropis nyssona* (Dall, 1919), but this species from Japan and China is smaller and bears about 8 spiral cords; moreover, the granules of the subsutural cord are pointed.

The new species is also superficially similar to *Zetela annectens* Marshall, 1999 from New Zealand and *Lamellitrochus pourtalesi* (Clench & Agayo, 1939) from West Atlantic, but these species are smaller and show a very different shape with 3 keels.

Etymology. The new species is named after our friend Alphonse Thielemans, Belgium, who was a faithful member of the Belgian Malacological Society and who unfortunately passed away in 2000.

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I would like to thank G. T. Poppe (Berchem, Belgium) who draw my attention to the specimens upon which the present work is built. I am also very grateful to P. Bouchet (Muséum national d'Histoire naturelle, Paris) for access to the malacological ressources of the MNHN, to V. Heros (MNHN) for the kind attention she gave to all my enquiries for searching various scientific papers, and to R. Houart for his judicious advices.

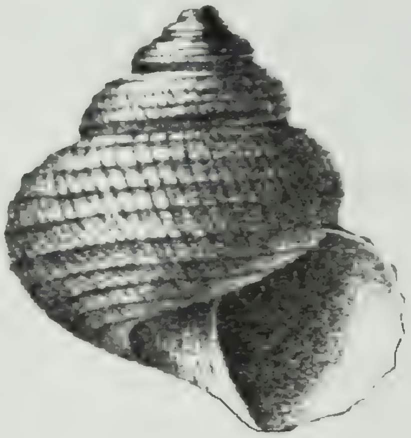

Fig. 1 *Calliotropis illota* (Watson, 1886) (from Watson)

	H	D	HA	H / HA	H / D
holotype	15,5	11,9	5,6	2,8	1,3
paratype 1	11,5	9,8	5,1	2,3	1,2
paratype 2	10,0	8,8	5,0	2,0	1,1
paratype 3	8,3	7,7	4,0	2,1	1,1
specimen 1	9,1	7,5	3,7	2,5	1,2
specimen 2	9,3	7,6	4,2	2,2	1,2

Table 1. - *Zetela alphonsi* : Shells measurements in mm – sample of 6 specimens.

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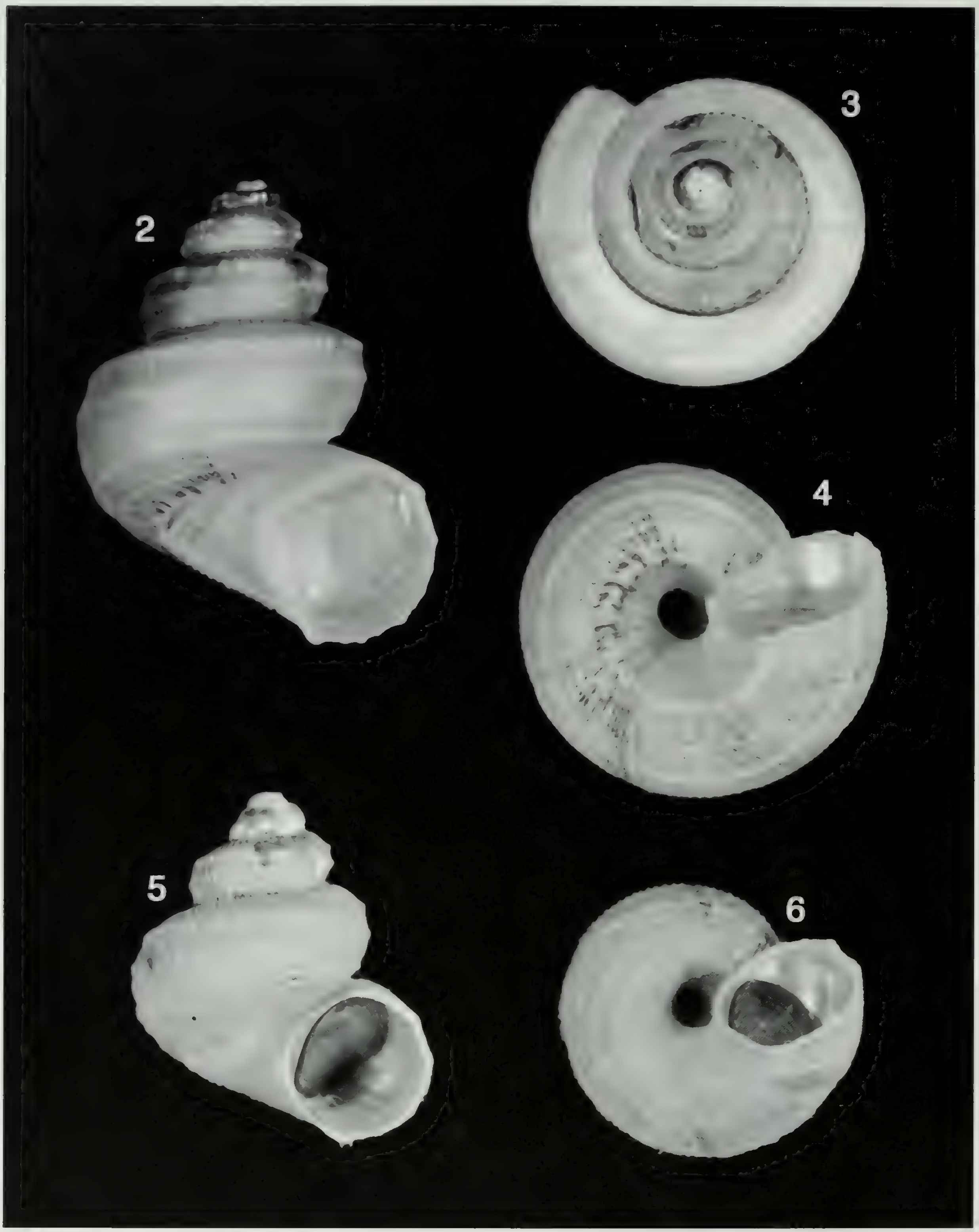

Figures 2-6. *Zetela alphonsi* n.sp.

2-4. Holotype MNHN, Chile, off Chiloé, 15.5 x 11.9 mm.
5-6. Paratype IRSNB, Chile, off Chiloé, 11.5 x 9.8

Review of the genus *Pachybathron* Gaskoin, 1853 (Gastropoda : Cystiscidae)

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KEY WORDS. Cystiscidae, *Pachybathron*, external anatomy, radulae, Caribbean Sea, Panamic Province, new species, sibling species, biogeography.

ABSTRACT. The species of the genus *Pachybathron* Gaskoin, 1853 are studied. Four species are revised, all recorded from the southern Caribbean sea, and a new species, *P. olssoni* sp. n., is described from Panama. The external anatomy and the radula of the majority of the animals are presented. Information is given on the habitat and distribution of each species. The biogeographical aspects are discussed.

RESUME. Les espèces du genre *Pachybathron* Gaskoin 1853 sont étudiées. Quatre espèces sont révisées, toutes rapportées du sud de la mer Caraïbe, et une nouvelle espèce, *P. olssoni* sp. n., est décrite du Panama occidental. L'anatomie externe et la radula des animaux sont présentées. Des informations sont données sur l'habitat et la distribution des espèces. Les aspects biogéographiques sont discutés.

INTRODUCTION

The genus *Pachybathron* was described by Gaskoin (1853, p.356-358), and was based upon two species : *P. cassidiforme* Gaskoin, 1853 and *P. marginelloideum* Gaskoin, 1853. *P. cassidiforme* was described first, and must therefore be considered as the type species. This species remained very elusive for more than a century, with even the holotype being apparently lost. It was neither figured nor recorded in collections after its description until a photograph of a shell from the Coen Collection (HUJ) was presented by Coomans (1973, p. 12). In the same paper, Coomans demonstrated that the type locality recorded by Gaskoin ('Island of St. Vincent') should be interpreted as a Caribbean locality as opposed to a West African one.

Since its description by Gaskoin, the familial placement of the genus *Pachybathron* has been much discussed. Gaskoin himself (1853, p.356) declined to associate the genus with the Marginellidae, Cassidae or Cypraeidae. Coomans (1972) presented, in chronological order, the different stages of this discussion by previous authors but failed to add the important comments of Sowerby (1852, re-ed) to this debate. Sowerby stressed the resemblance of the species he illustrated (*P. marginelloides*) to those of the genus *Marginella (sensu lato)*, and he characterised the original features of the genus *Pachybathron* thus : '….the columellar lip spread over the body whorl and the teeth continued across it in folds.' Sowerby also noted that *Marginella kieneriana* Petit, 1838 was close to *P. marginelloides* and commented that this could associate the genus *Pachybathron* with the 'Marginellae'.

Six taxa, all described from Caribbean localities, present a shell morphology which allow their placement into the genus *Pachybathron* :

Marginella kieneriana Petit, 1838
Erato cypraeoides C.B. Adams, 1845
Pachybathron cassidiforme Gaskoin, 1853
Pachybathron marginelloideum Gaskoin, 1853
Pachybathron tayrona Diaz and Velasquez, 1987
Microcassis colettae Paulmier, 1997

They all share the shell features of a very long and narrow aperture, a moderate to heavily callused columella, callused parietal surface traversed by continuations of columellar plaits, a strongly denticulated inner lip, marked transverse lirae regularly spaced along the internal apertural wall, and a tendency to form a pattern of chevrons of various configurations on the body whorl.

During the last 30 years, several partial revisions of the genus have been published. Coomans (1972 and 1973) recognised two species ; *P. cassidiforme* Gaskoin and *P. cypraeoides* C.B. Adams (Synonym : *P. marginelloideum* Gaskoin) assigning them to 'the

Marginellid genus *Pachybathron*, related to *Persicula*' (1973, p. 12).

Diaz and Velasquez (1987) attributed the same two species to the 'Marginellid genus *Pachybathron*' and described as new a third species, *P. tayrona*, from northern Colombia.

More recently, however, Coovert and Coovert (1995) declined to assignate generic status to *Pachybathron*, for the moment preferring instead to place it within the genus *Persicula* as part of the family Cystiscidae Stimpson, 1865.

The obtaining and observation of living specimens corresponding to the six taxa quoted above, together with the re-evaluation of the available type material, has enabled the current authors to propose a general revision of the genus *Pachybathron*.

During the preparation of this work, several new *Pachybathron* populations have been discovered off the coasts of Panama. One is possibly a western population of *P. tayrona*, whereas the other has sufficient original features to allow its description as a new species.

MATERIAL AND METHODS

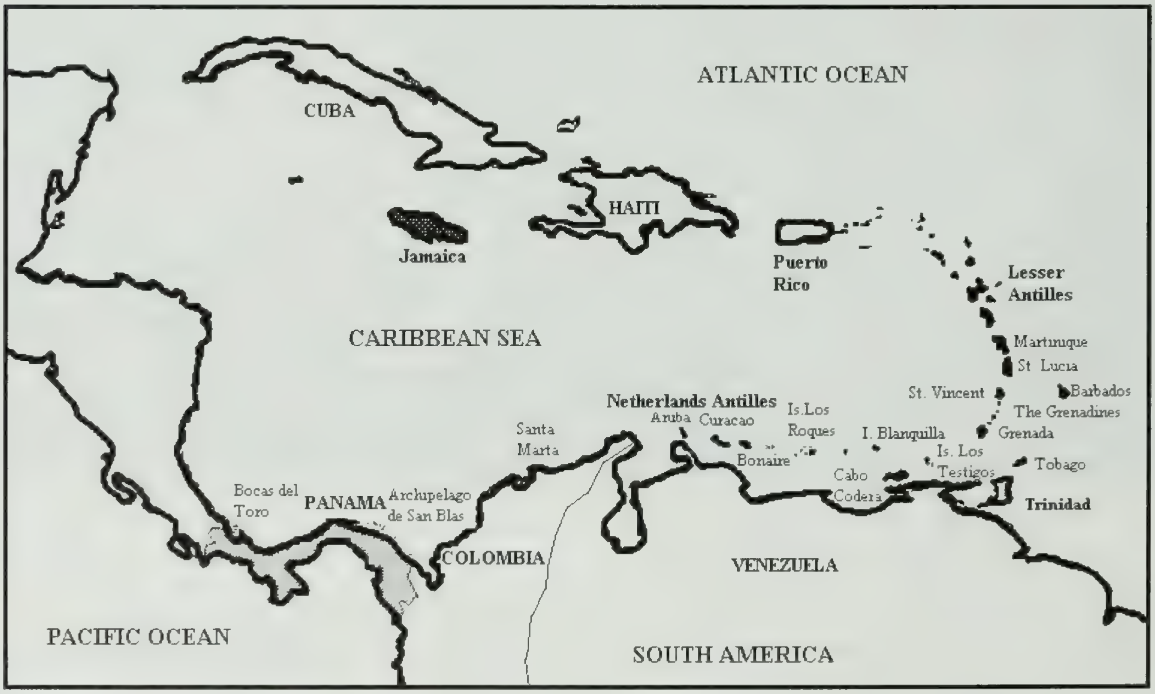
Living specimens of four species of *Pachybathron* were collected by several means:

- *P. kieneriana* was collected by small boat dredging in Central Venezuela by F. Boyer and later by F. Hennequin. T. McCleery also dredged this species in Central Venezuela, and in addition scuba dived for it (hand sieve technique) in Los Testigos Islands.
- *P. cypraeoides* was collected by diving and snorkelling in the Netherlands and Venezuelan Antilles by T. McCleery (a suction technique being used to extract sand and sediment, which was then hand sieved).
- *P. cassidiforme* was collected by diving in Martinique by P. Clovel, and in St. Vincent, Grenadines and Grenada by G. Mackintosh.
- *P. aff. tayrona* was collected by snorkelling (using suction apparatus and hand sieve technique) in the San Blas Islands, Eastern Panama by T. McCleery.

Numerous shells of a new species were obtained from Marcos Alvarez (Panama City). These shells were presented as several lots, variously labelled as coming from either the Caribbean region of Bocas del Toro, the Veraguas region with coasts both on the Caribbean and Pacific sides of Panama, or three localities from West Panama namely the Azuero Peninsula, and the Montuosas and Ladrones Islands. Taking natural variability into account, these shells were found to be conchologically conspecific. Due to the referred localities and to the depths and dates of the samples taken, most of these data are considered to be credible, and they are used as such for the determination of a specific distribution on both sides of the isthmus of Panama.

Field sketches and photography of the living animals were performed in most cases, and several specimens of each species were preserved in 70% isopropyl alcohol for later radular studies.

The radulae were extracted by E. Rolán and scanning electron microscope images produced (C.A.C.T.I., University of Vigo, Spain.)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Puerto Rico
Lesser Antilles
CARIBBEAN SEA
Martinique
St Lucia
St. Vincent
Barbados
The Grenadines
Grenada
Netherlands Antilles
Aruba
Curacao
Is.Los Roques
I. Blanquilla
Bonaire
Is. Los Testigos
Tobago
Cabo Codera
Trinidad
Santa Marta
Bocas del Toro
PANAMA
Archipelago de San Blas
COLOMBIA
VENEZUELA
PACIFIC OCEAN
SOUTH AMERICA

Fig. 1.
Map showing the area of distribution of the genus *Pachybathron*

ABBREVIATIONS AND TERMINOLOGY

The following abbreviations are used in this paper:

NHM: Natural History Museum, London, England.
HUJ: Hebrew University of Jerusalem, Israel.
IRSNB: Institut royal des Sciences naturelles de Belgique, Bruxelles.
MCZ: Museum of Comparative Zoology, Harvard, Massachusetts, U.S.A.
MHNLR: Muséum d'Histoire Naturelle, La Rochelle, France.
MNHN: Muséum national d'Histoire naturelle, Paris, France.
MOL: Instituto de Investigaciones Marinas de Punta de Betin, 'INVEMAR', Santa Marta, Colombia.
SMF: Seckenberg Museum, Frankfurt, Germany.
ZMA: Zoologische Museum, Amsterdam, The Netherlands.
AWC: Andrew Wakefield Collection.
FBC: Franck Boyer Collection.
TMC: Tony McCleery Collecton.
JCC: Jacques Colomb Collection, Marseilles, France
LBC: Luigi Bozzetti Collection, Milan, Italy.
ABC: The Islands of Aruba, Bonaire and Curacao which together comprise the Netherlands Antilles.

For the purposes of this paper, 'specimen' refers to a live taken specimen, whereas 'shell' refers to a dead collected shell.

SYSTEMATICS

Family **CYSTISCIDAE** Stimpson, 1865
Genus ***Pachybathron*** Gaskoin, 1853.
Type species : *Pachybathron cassidiforme* Gaskoin, 1853 (subsequent designation by Adams and Adams, 1858).

Pachybathron kieneriana (Petit, 1838)

Figs. 2-3, 18, 22-27, 50-51.

Marginella kieneriana Petit, 1838, p.20.

Type material. One syntype, considered to be the holotype, in MNHN, 11.5 x 7.6mm (Figs. 2-3).

Other material examined. - Puerto Frances, Cabo Codera, Central Venezuela, dredged and dived September 1999 on coarse muddy sand at 20 m. 8 adult specimens (8.3 x 5.2mm to 12.0 x 8.7mm), AWC.

- Puerto Frances, Cabo Codera, Central Venezuela, dredged February 1997 in sticky black mud at 25 m, 1 adult specimen (9.65 x 5.9 mm), AWC.
- Puerto Frances, Cabo Codera, Central Venezuela, dredged and dived September 1999 on coarse muddy sand at 20 m, 16 adult specimens (9.3 x 5.9 mm to 13.3 x 9.5 mm), TMC, (Figs. 22-24).
- Puerto Frances, Cabo Codera, Central Venezuela, dredged February 1997 from coarse coral sand at 15 m to sticky mud at 25 m, 12 adult specimens (9.1 x 5.7mm to 13.4 x 9.1mm), 3 juvenile specimens (6.0 x 4.0mm to 12.5 x 8.5 mm) and 1 adult shell (12.0 x 7.85mm), FBC.
- Isla Grande, Is. Los Testigos, Venezuela, dived June 1999 on coarse clean sand at 20 – 21m, 4 adult specimens (8.0 x 4.5mm to 8.9 x 5.3mm), AWC, and 3 adult specimens (7.5 x 4.4 mm to 8.6 x 5.1 mm), TMC, (Figs.25-27).
- Tobago, 2 large shells, Dautzenberg Collection (IRSNB).

Original description. '*Marginella kieneriana*, Petit. Long:12 mill. Larg:9 mill. – Testa parva piriforme, fulva, maculis albis transverses per quarto series dispositis ornate : spira brevissima, exsertiuscula, labro crasso, vix intus crenulato plicis columella octonis.'

Complementary Notes. Shell glossy, rarely completely smooth, usually with heavy growth lines. Medium to large sized for the genus (length 8mm to 12.5mm, possibly larger) comprising 2.5 whorls (excluding protoconch of 1.5 whorls) and presenting variety of outlines from globular, ovoid or pyriform, to sub-cylindric (Los Testigos). Spire slightly elevated and smooth with glazed suture. Aperture curved, narrow and parallel sided with very little anterior flare. Inner aspect of lip with 22-24 denticles. Lip thickened internally with no external callus formation. 8 columellar plaits. Weak parietal callus traversed by 8 plaits. Strong parietal callus ridge at entrance to aperture. All of parietal callus blends into glaze of body whorl with no posterior groove to separate the two.

Colour variable. Base colour tan. Olive green bands encircle body whorl either concentrated as one main central band, or as three or four narrower ones. These bands form the background to the spiral chevron pattern. Spiral chevron pattern of 5-7 evenly spaced rows from sub-sutural level to anterior extremity. Pattern comprises white blotches with rounded to pointed black chevrons pointing towards the growing edge of the shell. Nearer to the lip, extra white marks and associated chevrons are formed between the regular rows, disrupting the regular pattern. Spire colour reddish tan, becoming paler towards protoconch, which is translucent at the nucleus (Figs. 22-27). Specimens which retain the basic pattern but are weakly coloured, appearing yellowish to pinkish tan overall, are often found amongst the typical darker shells.

The following description of the animal is based on the study of several specimens from Puerto Frances (Fig. 18): Typical Cystiscid Type 4 animal (after Coovert & Coovert 1995). Foot reddish brown with opaque white blotches, some fusing together to form larger irregular edged patches. Bilobed head opaque white, each half having a streak of reddish brown running from slightly behind the small black eye,

medially and anteriorly to meet the other at its tip. Eyes situated at the base of the two short reddish brown tentacles. Siphon short, opaque white, and fringed at its tip with reddish brown.
The radula was extracted from a specimen from Puerto Frances (Figs. 50-51) : Type 3 Cystiscid radula (after Coovert & Coovert 1995). Very thin (10 µm), cord like, uniserial radula with approximately 400 strongly arched and overlapping rachidian plates. Each plate has 9 sharply pointed cusps, the strongest being the single central cusp. The lateral cusps are slightly smaller, with the most lateral tooth being diminutive.

Type locality. Les Plages de la Guayra, Venezuela.

Distribution. The species has been found from La Guayra (central mainland coast of Venezuela) to Los Testigos Islands and Tobago. Due to its various habitats, it could well have a wider distribution in Venezuelan mainland coastal locations as well as in offshore island groups. Unconfirmed reports that this species has been found in Brazil require verification.

Habitat. Available records indicate an important variability of habitats, from sticky black mud to coarse clean white coral sand. The bathymetric range of distribution of the species is currently known to be from 15 to 25 m.

Remarks. This species has the most distinctive shell of all the group, and has until now been considered to be a member of the genus *Persicula* by most authors. It does possess, however, all of the defining characteristics of the genus *Pachybathron* (ovoid to pyriform shell shape, slightly elevated spire, parietal callus with horizontal plaits, labial denticles, chevronned pattern, body whorl often with numerous growth lines, and similarities in the chromatism of the soft parts of the animal), and therefore the authors consider that its correct taxonomic assignation should be within this genus.
The central Venezuelan coastal populations exhibit considerable variability of size, morphology and colour pattern. Specimens from Los Testigos Islands, however, all appear to have more constant characters (size, very regular rows of chevrons, and a very dark brown parietal callus and anterior notch). This may be a phenotypic expression of the smaller genetic pool found within relatively smaller isolated colonies in the offshore island localities. The minor differences in shell shape and colour pattern between both populations are not considered of sufficient magnitude to permit separation into different species, unless further analysis of the animals suggests this is indicated.

***Pachybathron cypraeoides* (C.B. Adams, 1845)**

Figs. 4-10, 19, 28-37, 52-53, 56-58.

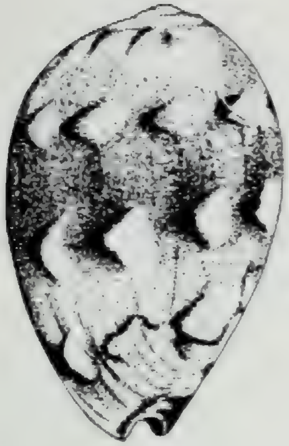
Erato cypraeoides C.B. Adams, 1845, p.1-2.
Pachybathron marginelloideum Gaskoin, 1853, pp. 357 – 358, figs. 4-6.

Type material. Two syntypes are deposited in MCZ and were examined by the authors. Though badly worn and faded, one syntype is clearly recognizable as being representative of the species (Figs. 5-7). This specimen was figured as a black and white photograph by Clench and Turner (1950, p.271, fig. 11) in their revision of the species described by Adams. This selection by Clench and Turner must be considered as the designation of a lectotype. The paralectotype is in fact the shell of another species, *Persicula chrysomelina* (Redfield, 1848). The lectotype, ref. No. 186065, measures 7.9 x 5.2mm. The holotype of *P. marginelloideum* is recorded as being deposited in Cabinet Gaskoin in the NHM but no trace of it can be found there and so it is presumed lost. It measured 7.1 x 4.1mm.

Other material examined. - Aruba harbour, Netherlands Antilles. Suction, followed by hand sieving, September 1999 from grass and rubble at 0.5-1m, numerous adult specimens (6.5 x 4.5mm to 8.5 x 5.5mm.), TMC, (Figs. 28-30).
- Aruba harbour. Dived and hand sieved September 1999 from sand and coral rubble at 0.5 – 1m, two adult specimens (measuring 8.4 x 5.4mm and 7.4 x 4.8mm), and one juvenile specimen, used for radular examination (5.2 x 3.2mm), AWC.
- East of Aruba harbour. Snorkelled and hand sieved September 1999 from sand and coral rubble at 2-2.5m, one adult specimen, TMC.
- Malmok bay, Aruba. Dived and hand sieved September 1999 from sand and coral rubble at 7- 8m, seven adult specimens (6.0 x 4.0mm to 7.4 x 4.6mm), TMC, (Figs 31-33).
- Malmok, Aruba. On clean sand at 7m. One specimen (6.8 x 4.1mm) and one shell (8.0 x 5.15mm), FBC.
- Arasji, Aruba. Two adult shells and two juvenile shells, FBC.

Figures 2-10.

2-3. *P. kieneriana* Petit, 1838, syntype (MNHN), 11.5x7.6mm; **4.** *P. cypraeoides* C.B. Adams, 1845, La Blanquilla, Venezuelan Antilles, 4.35x2.8mm; **5-7.** *P. cypraeoides* C.B. Adams, 1845, lectotype (MCZ), 7.9x5.2mm; **8-10.** *P. cypraeoides* C.B. Adams, 1845, original figures.



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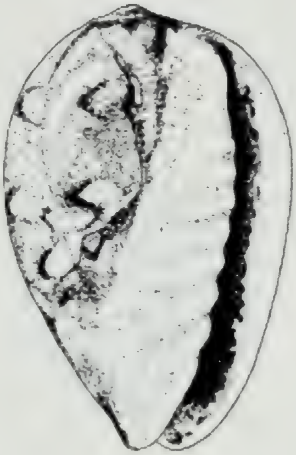

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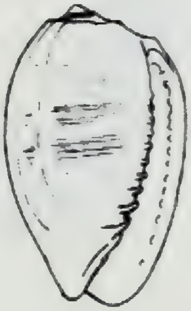

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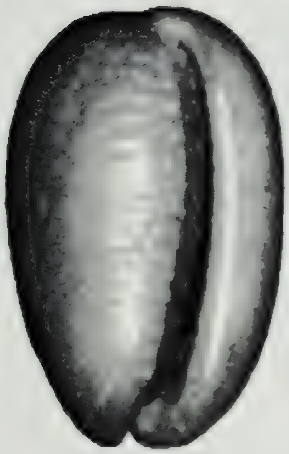

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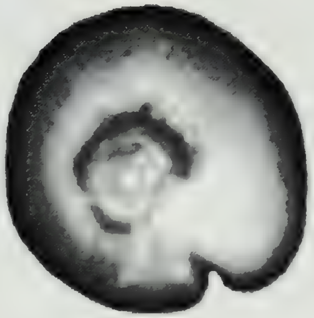

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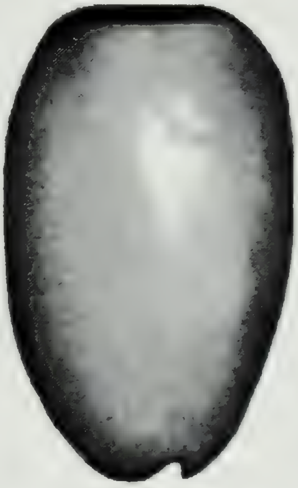

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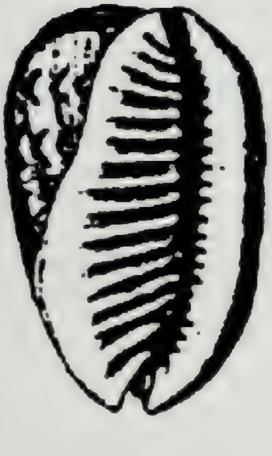

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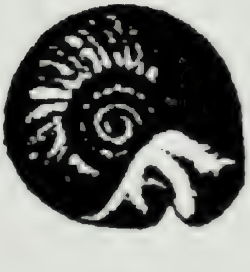

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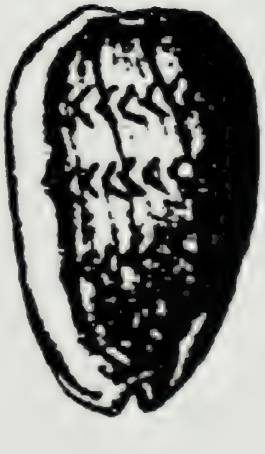

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- Lac Bay, Bonaire, Netherlands Antilles. Snorkelled and hand sieved 1998 from grass and rubble at 2m, one adult specimen (7.0 x 4.1mm), TMC.
- Curacao, Netherlands Antilles. Eight slender shells (5.3 x 3.2mm to 6.2 x 3.6mm), LBC, (Figs. 34-35).
- Los Roques, Venezuean Antilles. Snorkelled and hand sieved July 1999 from white sand at 1m, one adult specimen measuring (6.5 x 4.1mm), TMC, (figs. 36-37).
- La Blanquilla, Venezuelan Antilles. Dived at 12m on sand, one subadult specimen (4.35 x 2.8mm), JCC (Fig. 4).
- Many specimens and shells in ZMA, all listed in Coomans (1972, p.91).

Original description. 'Erato (?) cypraeoides M. t. solida, alba; anf. ifra suturam fusco-canaliculatis; spira plana, parva; apertura lineari, pro (2) funde emarginata; labro extra crasso, intus exile crenulato; labio per totum transversum exile plicato. Long. .325 poll.; lat. .2 poll. Jamaica.'

Original figures. See Figs. 8-10.

Complementary notes. Shell glossy, medium to heavily callused and ribbed with growth lines. Medium sized (length from 5.2 mm to 8.5 mm) for the genus. Comprising 2 whorls (excluding protoconch), and presenting an ob-ovate outline. Spire slightly depressed with a low lens-shaped, translucent white protoconch, comprising 1.5 whorls. Suture irregular, glazed over.

Aperture narrow, slightly curved and parallel sided except for a slight flare anteriorly. Inner aspect of lip has 15-18 denticles, obliterated and uncountable in some specimens due to very heavy labial callus, which extends posteriorly slightly beyond spire height. 5-9 columellar plaits. Strong parietal callus with 12-14 plaits lying horizontally across it, commencing from the parietal callus ridge. Edge of parietal callus demarcated in its posterior half by a deep groove. Anterior half gradually merges into glaze of body whorl.

Base colour of shell pure white. General appearance is yellowish off-white, due to presence of fine axial pattern which extends to cover the whole of the body whorl except the internal and external labial callus, and the parietal callus and columella which are all white. Microscopically the fine axial yellow brown lines are drawn sharply towards the lip forming 4-5 rows of sharp arrowheads. Macroscopically these are visible as spiral bands which appear slightly darker than the area in between. In many specimens the pattern can be extremely faint, and is then reduced to 4 -5 fine double rows of tiny brown spots representing the bases of the arrowheads. Occasional shells are almost pure white but there is rarely absolutely no trace of a pattern. Spire colour varies according to locality ; specimens from the Aruba,Malmok Bay population all have dark brown spires (excluding the protoconch which is always translucent white), whereas other populations from Aruba have colour absent from the spire (Figs. 28-33). The specimen from Klein Curacao (Coomans 1972, p. 92) also has a dark spire. This feature is therefore in need of further study.

The following description of the animal is based upon the study of several specimens from Aruba (Fig. 19) : Typical Cystiscid Type 4 Animal (after Coovert & Coovert, 1995). Bilobed head, and foot peachy – orange, finely fringed with bright orange. Midline and posterior part of foot also marked with bright orange. Tentacles short, completely orange. Eyes tiny, black, situated medially at base of tentacles.

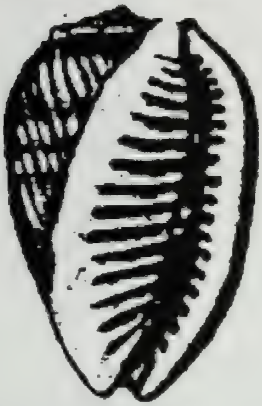
The radula was extracted from a sub-adult specimen from Aruba (Figs. 52-53) : Type 3 Cystiscid radula (after Coovert & Coovert 1995): Very thin (9 µm), cord like, uniserial radula with approximately 400 strongly arched and overlapping rachidian plates. Each plate has 7 - 9 sharply pointed cusps along the cutting edge, the strongest being the single central cusp. The lateral cusps can be of unequal size and are slightly smaller, the most lateral tooth being diminutive.

Type locality. Jamaica.

Distribution. The occurrence of *P. cypraeoides* in the quoted type locality of Jamaica has never been verified, and in fact remains distinctly unlikely. This can be concluded for the following reasons. Firstly, all the records from the date of the original description to the present day are from the ABC islands of the Netherlands Antilles, except two new recent records (Figs. 4, 36-37) from the neighbouring Venezuelan Antilles (Los Roques and La Blanquilla). Secondly, the paralectotype of *P. cypraeoides* is in fact a shell of *Persicula chrysomelina*, well known as a Netherlands Antillean endemic species. Finally, in the same paper C.B. Adams described another species (*Volvarina rubella* C.B. Adams, 1845) citing the same type locality as *P. cypraeoides*. *V. rubella* is well known from the Southern Caribbean but like *P. cypraeoides* has never been recorded from Jamaica since its original description.

Figures 11-17.

11-13. *P. cassidiforme* Gaskoin, 1853, original figures; **14-15.** *Microcassis colettae* Paulmier, 1997, original figures; **16-17.** *P. tayrona* Diaz & Velasquez, 1987, paratype MOL895, 8.7x5.0mm.



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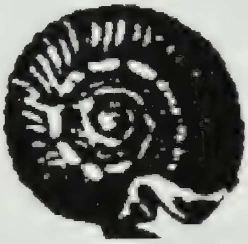

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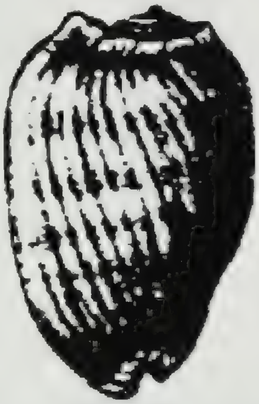

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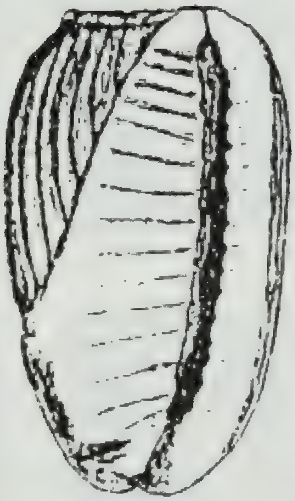

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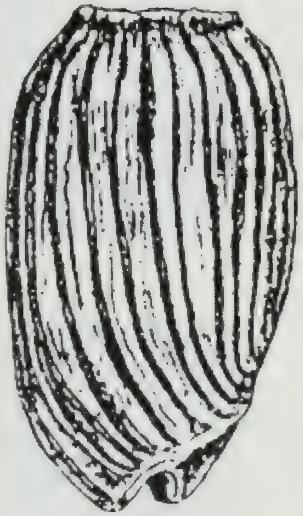

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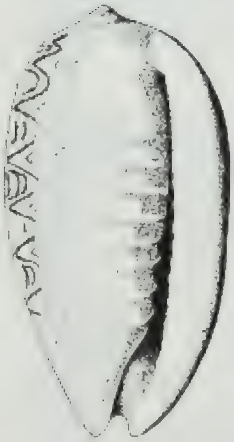

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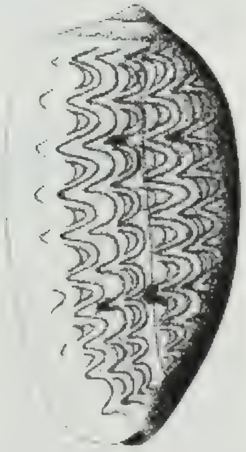

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It can therefore be assumed that C.B. Adams described *P. cypraeoides* from a lot of shells collected in the ABC islands. At this period in history, there was an active shipping trade between Jamaica and the ABC Island group, and Adams could have procured this particular lot of shells from a merchant vessel or similar source. The lectotype has a distinctly dark spire, and it is possible that it could have originated from the dark spired Malmok population (Aruba).

Based upon current collecting records, and the above albeit circumstantial evidence, we propose to provisionally consider that the distribution of *P. cypraeoides* is restricted to the Southern Antilles (ABC Islands to La Blanquilla). The apparent scarcity of the species in the Venezuelan Antilles (although this area has been reasonably well sampled during the last decade) is probably an indication that this archipelago could represent the extreme eastern edge of the geographical range of the species. The practically unexplored Paraguana Peninsula of mainland Venezuela is in close proximity to the Netherlands Antilles, and the presence of supposed endemic species from the ABC Islands must be investigated there. For example, two specimens of *Volvarina vokesi* de Jong & Coomans, 1988 were collected in the Park of Moroccoy, State of Falcon, 100km south of Bonaire Island (AWC).

In the collection of one of the authors (FBC) is a shell resembling *P. cypraeoides* which belonged to a lot of dead collected material from an old collection, with the label 'Callao, Peru'. This shell is identical to the material examined from the ABC islands, and was mixed with shells of several undetermined species of *Volvarina*, apparently not from the ABC islands. Future sampling of the molluscan fauna along the western coasts of Colombia, Ecuador and Peru should reveal if a sibling species of *P. cypraeoides* really does occur in the Panamic province.

We propose the Islands of the Netherlands Antilles (Aruba, Bonaire, Curacao) as the revised type locality of *P. cypraeoides.*

Habitat. In coral rubble and *Thalassia* beds. Compact communities were observed in Aruba at 0.5-3m and again at 7-8m. Coomans (1972, p. 92) quotes a fresh specimen taken at 60m near Klein Curacao (deposited in NNM).

Remarks. The lot of small slender shells from Curacao (Figs. 34-35) could simply represent a local form of *P. cypraeoides*. The obtaining of live specimens of this population will be necessary to determine if this is the case or if they are in fact morphological intergrades between the eastern *P. cassidiforme* and the western *P. tayrona*. In addition, the two specimens from Los Roques and La Blanquilla (Figs. 4, 36-37), though assigned here to the taxa *P. cypraeoides*, are certainly not typical of that species. They have some morphological affinity with *P. cassidiforme*, have a translucent white shell with seven narrow opaque spiral bands and only a faint suggestion of the usual zigzag pattern. A picture appears to be emerging, therefore, of a cline of *Pachybathron* populations distributed right across the Southern Caribbean region, comprising several sibling species distributed at geographic intervals.

The original description and the type figures of *P. marginelloideum* (Figs. 8-10) are a perfect match for the species *P. cypraeoides*, thereby making *P. marginelloideum* its junior synonym. This synonymy has been previously stated by Coomans (1972).

Pachybathron cassidiforme Gaskoin, 1853

Figs. 11-13, 20, 38-39, 54.

Pachybathron cassidiforme Gaskoin, 1853, pp. 356-357, figs 1-3.

Microcassis colettae, Paulmier 1997, pp. 733-748. Figs. 1-4, 9.

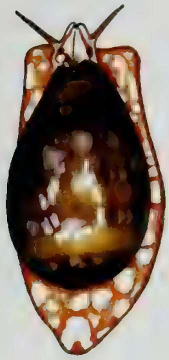
Type material. *P. cassidiforme* is recorded as being deposited in Cabinet Gaskoin, British Museum, but there is no trace of the type specimen (nor any other specimen of this species) in the collections at the NHM. The holotype (which measured 6.3 x 3.8mm) is therefore presumed lost. The specimen from HUJ (ref. No. 31.587/1 ex. Coll. Coen 2008), figured in Coomans (1973, p. 12) is here designated as neotype. Length 6.8mm. Locality: Grenadines, Lesser Antilles.

The type material of *M. colettae* is as follows:

- Holotype.(Ref. No. MG1): Insular shelf, Martinique 14 36' 06 N-60 46' 44 W dredged in white sand at 60m. Adult shell (7.55 x 4.35mm), MHNLR.
- Paratypes (Ref. No. MG2): Same locality as holotype. Six adult shells (from 5.75 x 3.5mm to 7.4 x 4.2mm), MHNLR.

Figures 18-33.

18. *P. kieneriana* Petit, 1838, live animal; **19.** *P. cypraeoides* C.B. Adams, 1845, live animal. **20.** *P. cassidiforme* Gaskoin, 1853, live animal; **21.** *P. aff. tayrona* Diaz & Velasquez, 1987, live animal**; 22-24.** *P. kieneriana* Petit, 1838, Puerto Frances, Cabo Codera, Venezuela, 10.5x6.8mm. **25-27.** *P. kieneriana* Petit, 1838, Isla Grande, Los Testigos, Venezuela, 8.7x5.1mm; **28-30.** *P. cypraeoides* C.B. Adams, 1845, Aruba Harbour, Netherlands Antilles, 8.5x5.5mm**; 31-33.** *P. cypraeoides* C.B. Adams, 1845, Malmok, Aruba, Netherlands Antilles, 7.4x4.6mm.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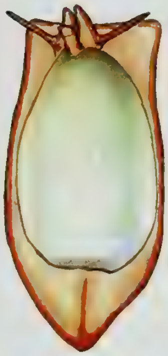
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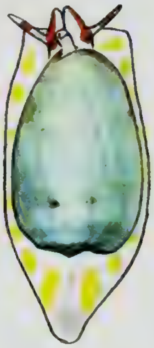
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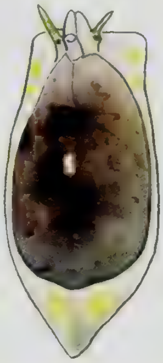
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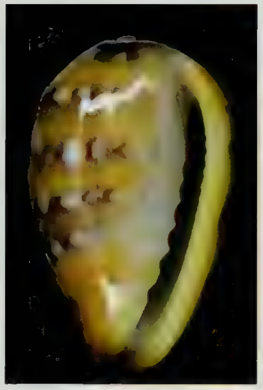
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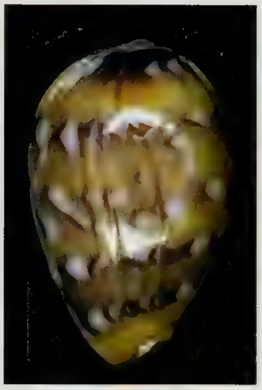
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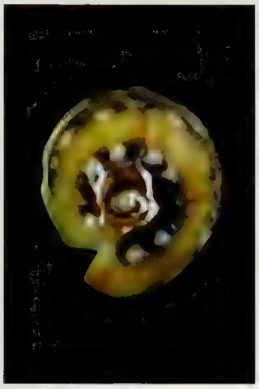
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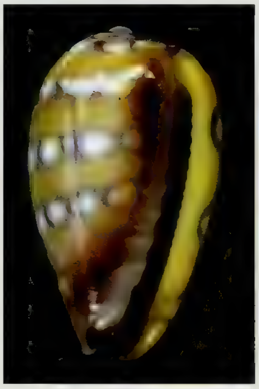
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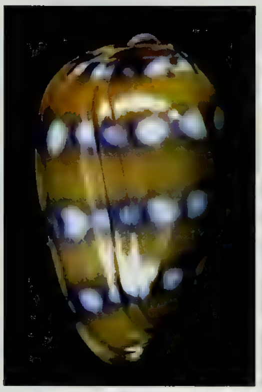
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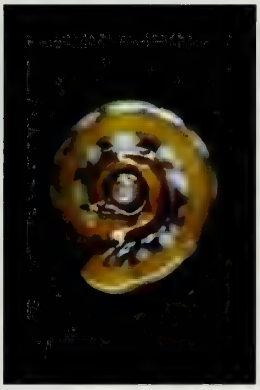
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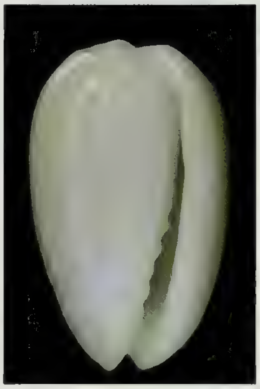
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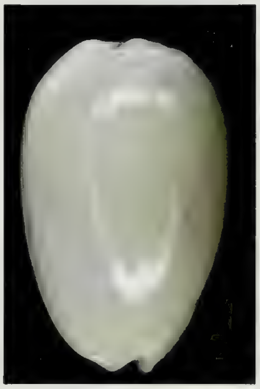
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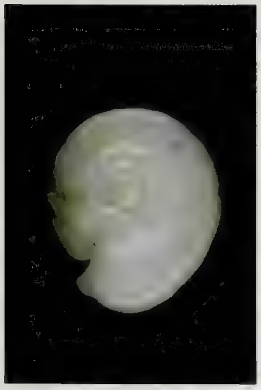
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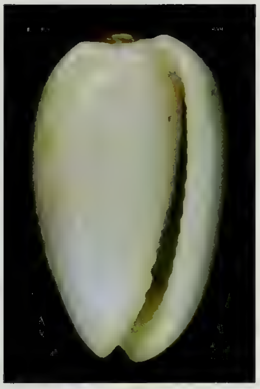
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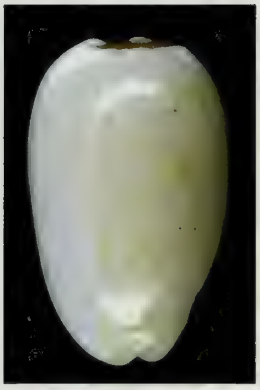
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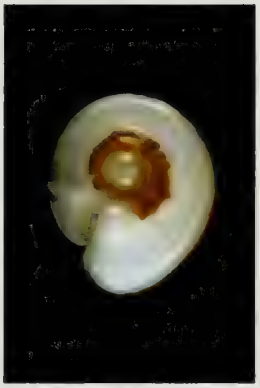
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Other material examined. - Isle de Ronde, Grenada (north end of bay), dived 1998 in coral rubble at 7m, one adult shell (5.8 x 3.6mm), TMC, (Figs. 38-39).
- Anse d'Arlet, Martinique. Scuba and hand sieved January 1999 under flat coral rock in sand at 22-30m, one adult specimen (5.2 x 3.6mm), TMC ; two adult specimens (6.0 x 3.8mm and 5.65 x 3.5mm), AWC ; one specimen (3.3mm long) and four shells (from 5.1 to 5.35mm in length), FBC.
- Baliceaux Island, St. Vincent. Dived and sieved May 1997 from sand at 13m, one specimen (measuring 6.1 x 3.9mm), AWC.
- Frigate Is, Grenada. Dived at night in sand at 8m. One specimen (5.3mm long), FBC.

Original description. 'Shell subcylindrico-ovate, opake-white colour, three continuous bands a few shades darker than the shell traverse the dorsum ; dorsum coarsely striated longitudinally ; spire rather depressed, subacuminated, volutions four, irregularly crenulated ; the posterior edge of the last whorl forms a coronated ridge at the base, of which a deep depression surrounds the shell terminating at the outer part of the aperture ; base rather round, broad and very thick, abrupt at its outer border, and extends over the anterior third of the side of the shell, terminating on the columellar extremity ; aperture rather narrow, slightly curved ; outer lip thick and finely denticulated along the inner edge ; columellar side, about twelve or fourteen distant linear teeth transvers the entire base and terminate on the inner margin of the columellar groove ; columellar groove shallow ; extremities flat (perpendicularly), rather prominent and keeled, posterior end of aperture not rostrated ; channel deep and rather short.'

Original figures. See Figs. 11-13 for *P. cassidiforme* and Figs. 14, 15 for *M. colettae*.

Complementary notes. Shell small for the genus and has the original feature of an unglazed body whorl, even in fresh specimens. The regular growth lines are the most numerous of the genus, and result in a distinctly axially costate body whorl.
The following description of the animal is based upon a study of a single specimen from Martinique (Fig. 20) : Typical Cystiscid Type 4 animal (after Coovert & Coovert 1995). The foot, which does not extend very far out of the shell, is translucent grey with yellowish patches of various sizes, and on the specimen examined, two large yellow patches situated either side of the midline on the posterior part of the foot. Tentacles translucent grey except the middle third which is bright orange. Lateral surfaces of each head lobe also bright orange, this extending to surround the tiny black eyes which are situated on the medial aspect of the base of the tentacles.
The radula was extracted from a specimen from Martinique (Figs. 54) : Type 3 Cystiscid radula (after Coovert & Coovert 1995): Very thin (7 µm), cord like, uniserial radula with 425 strongly arched and overlapping rachidian plates. Each plate has 9 sharply pointed cusps, the strongest being the single central cusp. The lateral cusps are slightly smaller, the most lateral tooth being diminutive.

Type locality. Island of St. Vincent.

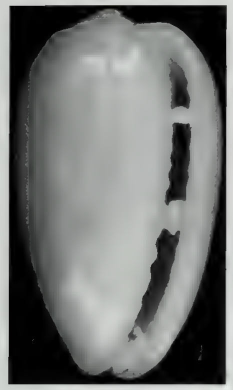
Distribution. Known only from the southeastern Antilles, from Martinique to Grenada.

Habitat. Found by divers in coral rubble and sand under coral slabs at 7-30m. The species seems to be a sand dweller, moving at night (G.Mackintosh, pers. comm.). Its bathymetric range of distribution must be considered as deeper than this as *M. colettae* was found as deep as 123m (Paulmier,1997).

Remarks. Living specimens of this species were only discovered in the Grenadines as recently as 1997 by G. Mackintosh, and a short time later by P. Clovel in Martinique. The axial costae, unglazed body whorl and dark blotch at the base of the columella enable this species to be easily identified, and there does not appear to be any distinguishing feature by which specimens from Martinique can be separated from Grenadian examples.
Paulmier (1997) makes no mention of the possibility of the animal being a Marginelliform gastropod, but instead considers it to be associated with the *Cassidae*. The study of dead shells only may be partly responsible for this. Paulmier therefore not only assigns an invalid species name, but also erroneously creates a new Genus, *Microcassis*. Nevertheless, Paulmiers work is useful in that it presents new information on the bathymetric range of the species, which can be considerably extended to 123 metres. It has been confirmed herein that the species is in fact a Cystiscid, and is the same as that described in 1853 by Gaskoin as *Pachybathron cassidiforme*. *Microcassis colettae* Paulmier, 1997 is therefore a junior synonym of *P. cassidiforme*, Gaskoin, 1853.

Figures 34-49.

34-35. *P. cypraeoides* C.B. Adams, 1845, Curacao, Netherlands Antilles, 6.2x3.6mm; **36-37.** *P. cypraeoides* C.B. Adams, 1845, Los Roques, Venezuelan Antilles, 6.5x4.1mm; **38-39.** *P. cassidiforme* Gaskoin, 1853, Isle de Ronde, Grenada. 5.8x3.6mm; **40-42.** *P. aff. tayrona* Diaz & Velasquez, 1987, Porvenir, San Blas Archipelago, East Panama, 6.5x3.9mm; **43-45.** *P. olssoni* sp. n., Escudo de Veraguas Is, Bocas del Toro, East Panama. Holotype (NHM) 5.0x3.4mm; **46-47.** *P. olssoni* sp. n., Escudo de Veraguas Is, Bocas del Toro, East Panama. Paratype 6, 5.4x3.5mm; **48-49.** *P. olssoni* sp. n., Peninsula de Azuero, West Panama, Paratype 7, 5.9x4.0mm.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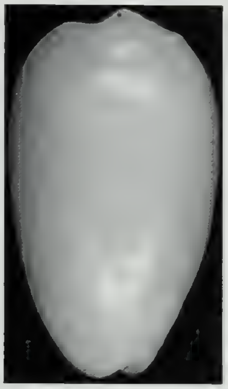
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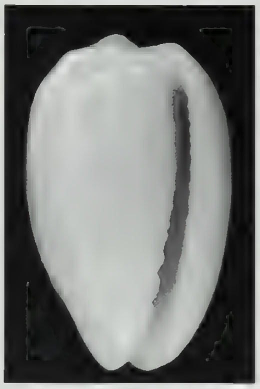
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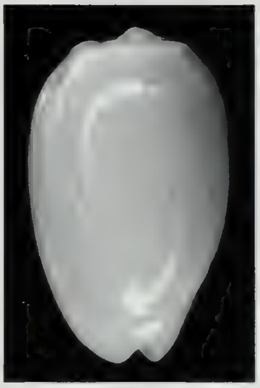
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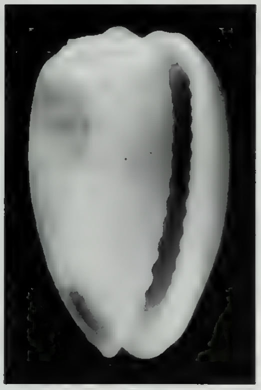
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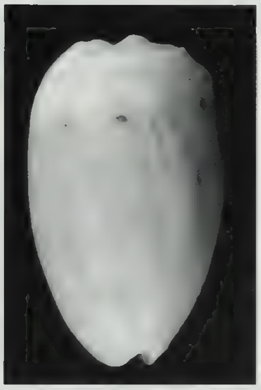
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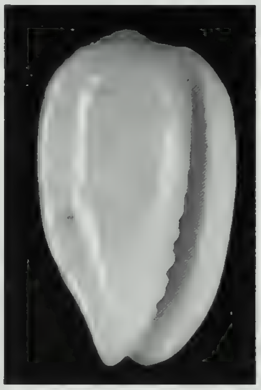
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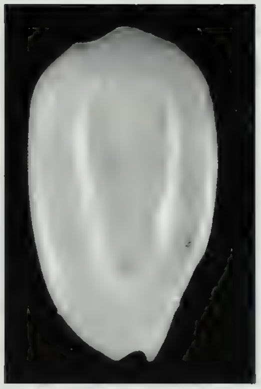
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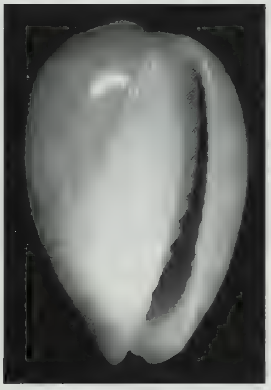
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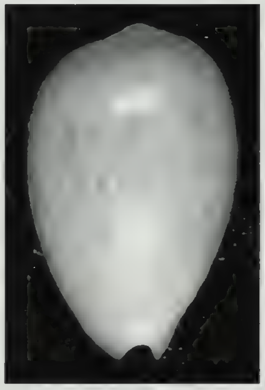
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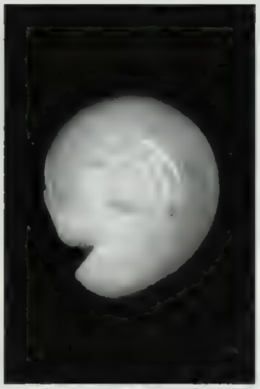
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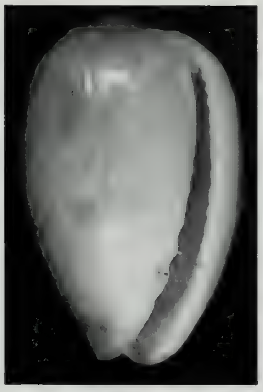
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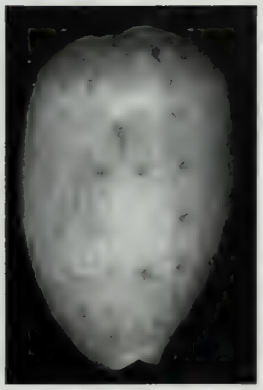
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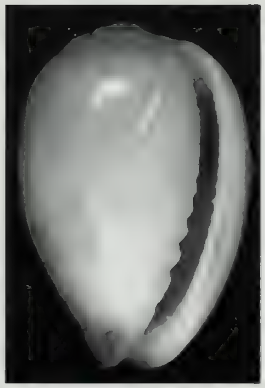
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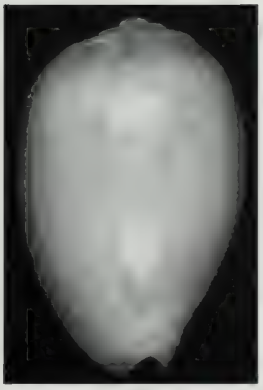
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Pachybathron tayrona Diaz & Velasquez, 1987
Figs. 16-17, 21, 40-42, 55.

Pachybathron tayrona Diaz & Velasquez, 1987, pp. 217 – 221.

Type material. - Holotype (Ref. no. 305966): Bahia de Chengue, Colombia, in *Thalassia* meadow at 0.5m. Adult specimen (10.2 x 5.8mm), SMF.
- Paratypes (Ref. nos. 305967 / 305968): Bahia de Chengue, Colombia, in *Thalassia* meadow at 0.5m. One adult shell (8.2 x 4.7mm), and one juvenile shell (no dimensions given), SMF.
- Paratypes (Ref. nos. 895 / 896): Bahia de Chengue, Colombia, in *Thalassia* meadow at 0.5m. One adult specimen (9.4 x 5.2mm), and one adult shell (11.5 x 6.3mm), MOL.

Other material examined - Porvenir, San Blas Archipelago, East Panama. In erosions in *Thalassia* beds in 1.5-2m. 36 adult specimens (from 5.6 x 3.4mm to 7.3 x 4.3mm), TMC, (Figs. 40-42) ; 11 specimens (from 6.4 x 3.6mm to 7.0 x 4.1mm), AWC; two adult and one juvenile shells, FBC.

Original Description. 'Shell medium sized (up to 11.5mm total length), obovated, thick shelled, glossy, with a rather blunt, low but unconcealed spire. Nucleus rather blunt, tan, apparently with two whorls, and covered by an irregular line. Surface of the spire may present some enamellous bulges along the suture. Body whorl smooth and polished; some fresh specimens (over 5.0mm long) bear four to six fine longitudinal scissulations on the body whorl, which can be better recognised on the dorsal side and near the outer lip.

Aperture rather narrow, extending about 6/7 of total length. It becomes anteriorly somewhat wider, twists lightly to the left and forms a distinct anterior notch, visible from the dorsal view. A callous formation along the parietal wall is poorly developed but visible: it extends above the end of the aperture towards the upper suture of the penultimate whorl and is minutely pitted.

There are nine to thirteen linear folds on the pillar whorl, the upper ones becoming nearly or completely obsolete. These pillar folds continue undiminished into the interior of the columella. Outer lip thickened, minutely pitted and bearing 18 – 20 denticulations.

Shell tan to dirty white, highly polished, spire occasionally with light brown to chestnut streaks or mottlings at the suture. Body whorl shows numerous microscopical wavy or interrupted longitudinal brown lines, which become widely spaced towards the outer lip. Some side by side running and uninterrupted lines form simultaneously a single arrow – pointed mark at regular intervals. Some other lines are weaker coloured and interrupted at the same intervals where the darker ones form the arrow – like flexures, leaving thus whitened spaces between two arrow series. Macroscopically this colour pattern is expressed as eight to nine spiral rows of whitened mottlings alternating with brown stains on a tan background. Some rows are usually more conspicuously coloured than others. In young and worn specimens, the colour pattern fades away, leaving a light tan or pure white shell.'

Original figures. The holotype (SMF 305966) and two paratypes (SMF 305967 and SMF 305968) are figured in the original paper.

Another paratype (MOL 895), 8.7x5.0mm, is figured here (Figs. 16-17).

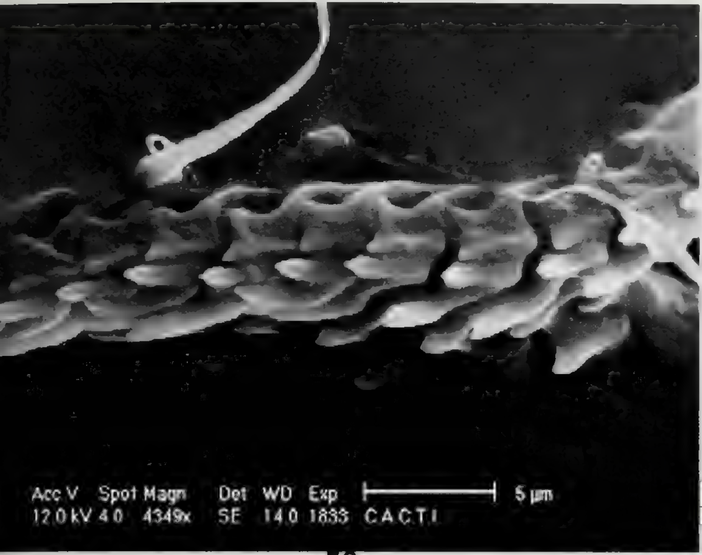
Complementary notes. Northern Colombian shells are large for the genus (up to 11.5mm long) whereas San Blas specimens (Figs. 40-42) are much smaller in size (up to 7.3mm). Both of these populations have a L/W ratio of 55-57% which is slender for the genus and comparable only to the two specimens of *P. cf. cypraeoides* from Paloe Lechi, Bonaire (Coomans, 1972) at 56.5% and the eight slender shells of *P. cf. cypraeoides* from Curacao in LBC (Figs. 34-35). These may be found to form a link in a cline of morphologies from *P. cypraeoides* to *P. tayrona.*

It is well known that shells from continental mainland coastal areas can be larger than those of populations from offshore islands where food supply is less abundant.

P. tayrona from Northern Colombia is typically light tan to cream across the whole of the body whorl (Diaz & Velasquez 1987). This is the impression when viewed from a distance, but on closer inspection it becomes apparent that it is the pattern of axial wavy lines which gives this effect, the base colour being either white or off white. In the vast majority of the San Blas specimens this pattern is reduced to a central band occupying 70% of the body whorl. The pattern is completely absent from the posterior 20% of the shell and also from the anterior 10%. The axial wavy lines in the central section lie parallel to each other and at 6 or 7 places along their length are drawn forwards to form an extra large arrowhead shape. This has the effect of creating 6 or 7 spiral rows of arrowheads encircling the central

Figures 50-55.

50-51. *P. kieneriana* Petit, 1838, Radula, scale bar 5 µm; **52-53.** *P. cypraeoides* C.B. Adams, 1845, Radula, scale bar 5 µm; **54.** *P. cassidiforme* Gaskoin, 1853, Radula, scale bar 5 µm; **55.** *P. aff. tayrona* Diaz & Velasquez, 1987, Radula, scale bar 10 µm.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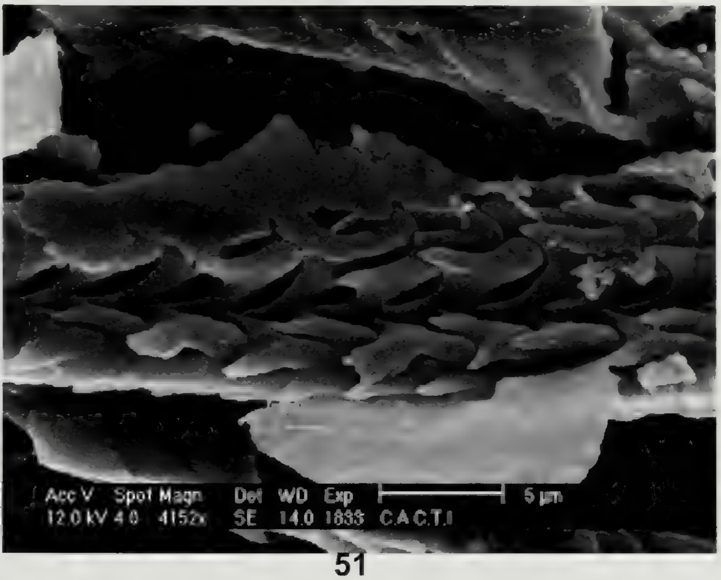
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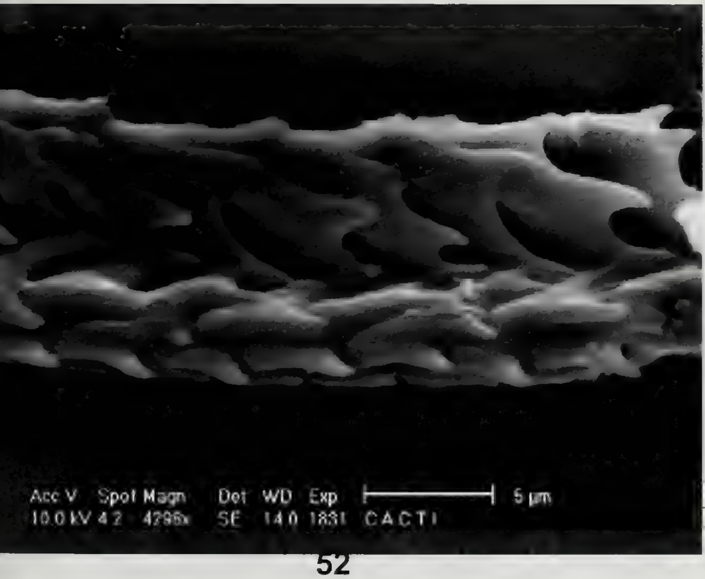
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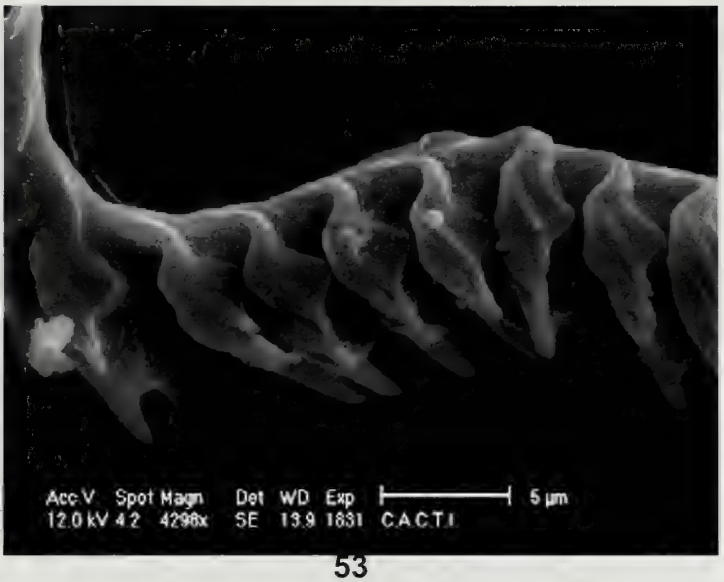
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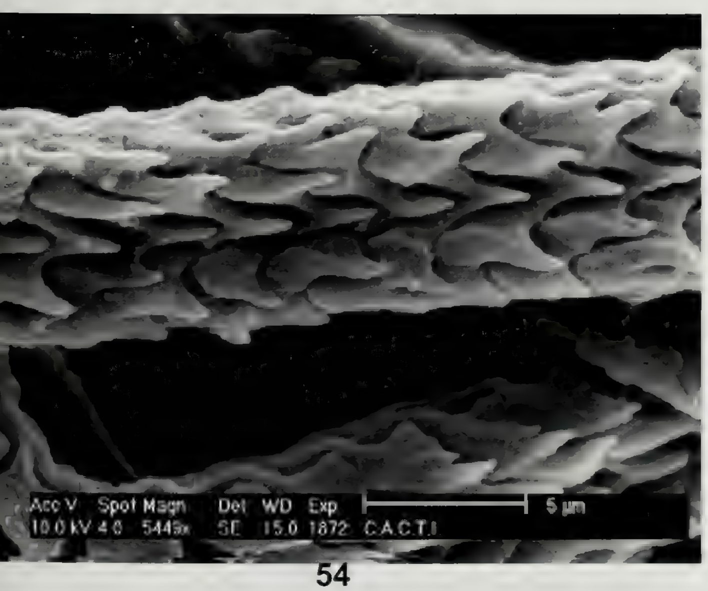
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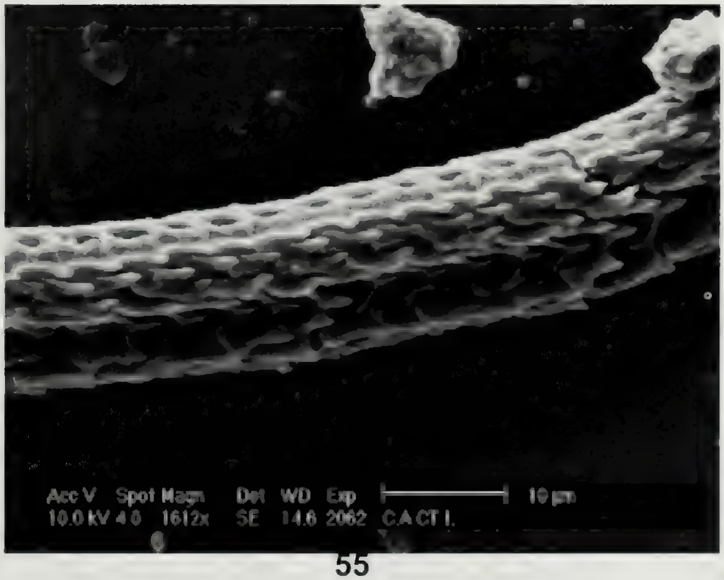
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10 µm
10.0 kV 4.0 1612x SE 14.6 2062 C.A.C.T.I.

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band. There are generally 2 or 3 irregular blotches of the same colour on the arrowhead row closest to the posterior end, and the same on the penultimate row at the anterior end. When viewed from a distance, these blotches appear to merge somewhat, giving the impression of two rows of brown markings. On occasional specimens, very faint traces of axial pattern can be detected in the light zones, but never on the spire itself, yet even then the overall effect of a darker central band remains. The intensity of the pattern varies slightly with the growth lines which form slightly raised ribs. There are only two specimens from San Blas which do not follow the above rule and exhibit a full length light brown axial pattern with 8 or 9 rows of chevrons (as in Colombian examples).

There are 16 or so countable labial denticles, fading out anteriorly into 6-8 internal lirae, as the lip begins to flare.

The following description of the animal is based on a study of several animals from San Blas (Fig. 21) : Typical Cystiscid Type 4 animal (after Coovert & Coovert 1995). All soft parts are medium grey-brown with small paler blotches. There are two larger pale patches situated either side of the midline on the posterior part of the foot. The short tentacles are a darker brown colour. The overall appearance is of rather a drab looking animal compared to the bright orange markings of some other species in the genus.

Radulae were extracted from two specimens from San Blas (Fig. 55) : Type 3 Cystiscid radula (after Coovert & Coovert 1995): Very thin (12 µm) cord like uniserial radula with, in the two specimens examined, 298 and 310 strongly arched and overlapping rachidian plates. Each plate has 9 sharply pointed cusps, with the central cusp being the strongest.

Type locality. Bahia de Chengue, Parque Nacional Natural Tayrona, Caribbean coast of Colombia.

Distribution. Initially thought to be restricted to the Northern Caribbean coast of Colombia, between the Bays of Santa Marta and Nenguange, but recently a population has been found in the San Blas Islands (East Panama). Once the population from San Blas was discovered at Porvenir, a search for other populations occupying similar habitat was instigated throughout the rest of the northwestern part of the archipelago, with no success. This population therefore seems quite isolated. However, it remains possible that other populations occur between the San Blas Archipelago and Santa Marta, as the intervening coastline has never been sampled for micromolluscs.

Habitat. In Northern Colombia, living specimens are found only in turtle grass beds (*Thalassia testudinum*) and under corals in shallow water to 3 metres. The specimens from the San Blas Archipelago were found in the banks of pit-like erosions in *Thalassia* beds, amongst its roots in 1.5-2 metres.

Remarks. The differences between the populations of San Blas and Santa Marta are mainly based on features not considered to be of major taxonomic importance (minor colour variation and size differences). The authors therefore feel that further exploration of the Colombian coastline West of Santa Marta is required before the specific status of both populations can be clarified. It is therefore proposed, for the time being, to refer to the San Blas population as *P. aff. tayrona.*

Pachybathron olssoni sp. n.

Figs. 43-49.

Type material. -Holotype. Escudo de Veraguas Island, Bocas del Toro Province, East Panama (Caribbean). Dredged 40-490 ft. in sand and red mud between 1976 and 1982. Adult shell (5.0 x 3.4 mm), NHM ref. no. 20001283, (Figs. 43-45).

-Paratype 1. Same locality as holotype. Adult shell (5.3 x 3.45 mm), NHM ref. no. 20001284.

-Paratypes 2 - 5. Ladrones Island, Gulf of Chiriqui, West Panama (Pacific). Dredged 200-300 ft. 1988. Four adult shells (5.6 x 3.5 mm, 5.4 x 3.4 mm, 5.5 x 3.5 mm, 5.0 x 3.2 mm), TMC.

-Paratype 6. Same locality as holotype. Adult shell (5.4 x 3.5 mm), TMC, (Figs. 46-47).

-Paratype 7. Peninsula de Azuero, West Panama. Dredged 200-400 ft. on sand and mud. 1986. Adult shell (5.9 x 4.0 mm), TMC, (Figs. 48-49).

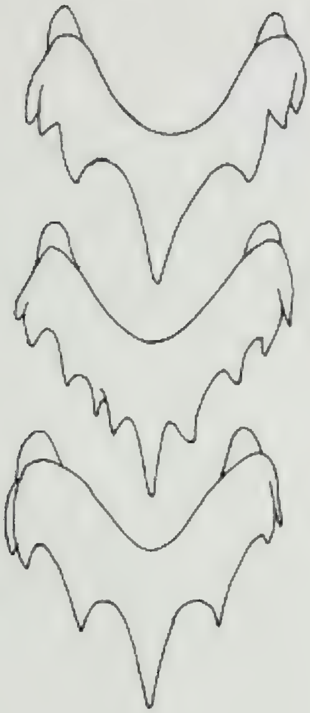
-Paratype 8. Ladrones Island, Gulf of Chiriqui, West Panama. One adult shell (5.6 x 3.7 mm), AWC.

-Paratype 9. Ladrones Island, Gulf of Chiriqui, West Panama. One adult shell (5.25 x 3.1mm), FBC.

Other material examined. - Veraguas Province, without further precision. Also Peninsula de Azuero and Montuosas Islands, West Panama (see section on Materials and Methods). Dredged in 30-120m. Eighty nine shells (from 5.0 x 3.2 mm to 7.3 x 4.5 mm), TMC.

Description. Shell glossy and small for the genus (length from 5 to 7.3 mm, averaging 5.4mm) with an average L/W ratio of 65%, comprising two whorls (excluding protoconch), presenting an outline varying from globular to oval-pyriform. Spire slightly elevated with a distinct, slightly irregular suture. Smooth, translucent, slightly raised protoconch of 1.5 whorls.

Aperture narrow and curved, approximately 9/10 of the total length of the shell, parallel sided for the posterior half, then flaring a little anteriorly. Inner aspect of lip has approximately 22 fine denticles which vary in size. Anteriorly the denticles are fine and small, gradually becoming larger and coarser centrally, then are fine and irregularly spaced



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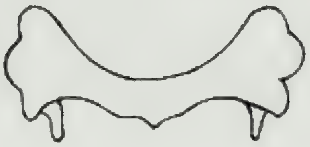

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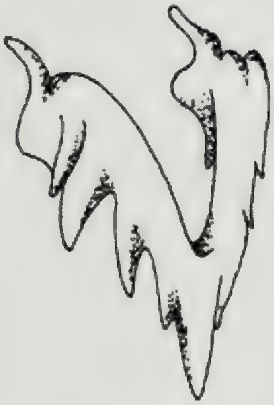

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Figures 56-58
56. Variation in a series of 3 rachidian plates (non-repeating pattern) of *P. cypraeoides* C.B. Adams, 1845.**57.** End view of single rachidian plate of *P. cypraeoides* C.B. Adams, 1845; **58.** three dimensional representation of a single rachidian plate of *P. cypraeoides* C.B. Adams, 1845.

towards the posterior end of the lip. Internal lirae visible through the thin shell of the body whorl on dorsal aspect.

Outer aspect of lip weakly callused, with a shallow external groove running its full length, and continuing around the siphonal notch. Siphonal notch 'V' shaped and deep, curving towards central axis of shell when viewed from anterior end.

Anterior half of columella internally bearing 5 or 6 distinct plaits, which fade out in the posterior half. Plaits emerge more clearly on apertural parietal callus ridge and extend across parietal callus almost horizontally as 10-12 evenly spaced plaits.

Edge of parietal callus demarcated along its posterior third by a deep groove. Anterior two thirds merges smoothly into body whorl as a clear glaze.

Colour pattern consists of light yellow–brown zig-zag pattern on a pale background, extending the full length of the shell giving an overall impression of a golden brown shell (in the majority of unfaded shells). The pattern varies in detail but generally comprises 6 or 7 (occasionally 8) evenly spaced rows of arrowhead marks which point towards the outer lip. Lip, columella and columellar half of parietal callus opaque white. Base of columella with a distinct brown blotch.

Animal and radula not seen.

Type locality. Bocas del Toro Province, East Panama (Caribbean).

Distribution. A number of identical shells selected from several tens of examples were labelled as coming from Ladrones Islands and Peninsula de Azuero on the Pacific side of Panama, more or less opposite Bocas del Toro Province. These are almost identical to the Caribbean shells, falling within their size range and exhibiting comparable shell features. In the present state of our documentation, it seems that the new species is distributed along both Caribbean and Pacific shores of Panama. Many species (or sibling species) of marine molluscs are known to range on both sides of Panama, so the case is quite likely. One point remains to be clarified, that is to know whether the Caribbean and the Panamic populations of *P. olssoni* sp. n. are truly conspecific, or if they belong to two sibling species. Further investigations of the soft parts of the animals (chromatism, variability of proteins, etc.) would provide the answer to this question.

Habitat. Unknown.

Remarks. *P. olssoni* sp. n. differs from other *Pachybathron* species in several respects. The body whorl is usually devoid of strong growth lines and is smooth and glossy. Due to the lack of growth marks the colour pattern remains very clear. Morphometric analysis reveals a L/W ratio of about 65%, which is very high for the genus and represents a very globular profile. The brown blotch at the base of the columella is a feature shared by only one other species in the genus, *P. cassidiforme*, from which it is clearly separable on other grounds. The combination of the locality data, a distinct shell profile, the columellar blotch, and the intricate axial pattern on a smooth surface are sufficient characters to enable the species to be described as new. *P. olssoni* sp.n. is named in honour of Axel A. Olsson, a pioneer in the study of the marine molluscan faunas of both the Caribbean and Pacific sides of Panama. He began his fieldwork in Panama as early as 1917 and published the majority of his work during the 1950's and 60's.

BIOGEOGRAPHY

During the Pliocene period, the Panamanian area constituted the southern part of the Limonian sub-province of the Gatunian. At this period in geological history, Panama and Northern Colombia formed a set of archipelagos of large and small islands separated by wide seaways. These allowed free exchanges of marine faunas between Pacific and Caribbean zones. At the end of the Zanclian and beginning of the Piacenzian stages of the Pliocene (Petuch, 1988), approximately 3 million years ago, the isthmus of Panama was formed, initially at the level of the Balboa Seaway, situated at the present level of Costa Rica and West Panama (close to the type locality of *P. olssoni* sp. n.). By the end of the Piacenzian era at the end of the Pliocene, only the Atrato Seaway remained open, situated at the level of the Darien Peninsula (close to the area of distribution of *P. tayrona*). The Isthmus of Panama was finally completed at the Pliocene-Pleistocene boundary, around 2 million years ago.

Due to the relatively recent (in geological terms) completion of the land bridge, it is hardly surprising that within many molluscan groups, similar phenae occur on both the Caribbean and Pacific sides. Some of these separated populations have been subject to gradual genetic drift (or even sudden mutation) which has led to reproductive incompatability and specific separation. These newly evolved species, though genotypically different from each other may have retained similar phenotypic characteristics and therefore appear almost identical to each other. Alternatively there may have been little or no genetic change and the separated populations could still have retained their mutual reproductive potential, despite being physically isolated from each other. Both of these scenarios could apply to populations of sibling *P. olssoni* and *P. cypraeoides* (if the both are confirmed as currently living on the Pacific side).

TAXONOMIC DISCUSSION

As expected, *Pachybathron* shares the same features of its radular apparatus with *Persicula*, namely strongly arched, overlapping, multicuspid rachidian plates, arranged as a long, thin cord (Figs.50-58). A significant difference however seems to be the relative lengths of the radula. According to observations under light microscopy undertaken by Coovert & Coovert (1995) the genera *Persicula, Gibberula* and *Canalispira* have rachidian plate counts of 80 to 209. The current study on the genus *Pachybathron*, utilising SEM observation of all but one of the currently known species, produced plate counts from 293-425. This dramatic difference could prove to be a reliable diagnostic feature at the generic level.

It has been observed that the various species of *Pachybathron* can be found in a wide variety of environments and habitats. *P. kieneriana* seems to be able to tolerate substrates of both sticky mud and coarse coralline sand. This could be responsible for its wide area of distribution along the mainland coast of Venezuela, as well as some offshore islands (Los Testigos and Tobago). Other species, e.g. *P. cassidiforme*, are restricted to offshore islands and found in places where fluvial sediments are absent. At least two species (*P. cypraeoides* and *P. tayrona*) appear to be restricted to environments comprising of coral sand and seagrass. The habitat of *P. olssoni* sp. n. is presently unknown (all the available material being dredged dead). As *P. olssoni* sp. n. is currently understood to be found on Pacific as well as the Caribbean sides of Panama, it demonstrates its ability to survive in two somewhat different environmental conditions, since the Pacific coast of Tropical West America nearly always has a Pacific swell which makes for turbid shallow water with a notable absence of *Thalassia* beds. The absence of P. olssoni sp. n. from Caribbean Southeast Panama (San Blas Archipelago) seems to be well established by recent enquiries. However, the general distribution of the species remains to be clarified, both along the Caribbean side (towards the coasts of Costa Rica and Nicaragua) and along the Panamic side (towards Costa Rican protected bays and the Gulf of Panama), as all these areas have not been checked for micromolluscs.

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We are also indebted to Adam Baldinger (Museum of Comparative Zoology, Harvard), Kathie Way and Joan Pickering (Natural History Museum, London), and Virginie Heros (Museum national d'Histoire naturelle, Paris) for access to type material, and to Juan M. Diaz (Instituto de Investigaciones Marinas y Costeras, Santa Marta, Colombia) for information on the Colombian population of *P. tayrona*.

Special thanks to Emilio Rolán (Vigo, Spain) who extracted all the radulae and provided SEM photographs.

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A new species of *Galeodea* Link, 1807 (Mollusca: Gastropoda: Cassidae) from the Philippine Islands

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KEYWORDS. Cassidae, *Galeodea*, Philippine Islands, new species

ABSTRACT. A new species of *Galeodea* Link, 1807 is described from the Philippine Islands and compared with the three other species of *Galeodea* occuring in the same area : *Galeodea leucodoma* Dall, 1907, *G. echinophorella* Habe, 1961 and *G. nipponica* Sakurai & Habe, 1961.

INTRODUCTION

In September 2001 the senior author got a *Galeodea* from a British shell dealer who had obtained this shell from the Philippine shell dealer Quirino Hora.
At first glance it looked like an aberrant specimen of *Galeodea nipponica*, but it is clearly distinguishable from this species.
After having discussed this species with Dr Alan Beu, Lower Hutt, New Zealand we have decided to describe it as a new species.

List of Recent *Galeodea* Link, 1807 and their geographical distribution :

Galeodea echinophora (Linné, 1758); Mediterranean.
Galeodea echinophorella Habe, 1961; southern Japan to Western Australia.
Galeodea ferrarioi (Bozzetti, 1989); Somalia.
Galeodea hoaraui Drivas & Jay, 1989; Reunion Island.
Galeodea keyteri (Kilburn, 1975); southern Mozambique to Natal, South Africa, and Madagascar.
Galeodea leucodoma Dall, 1907; Japan to Western Australia, and southern Madagascar.
Galeodea maccamleyi Ponder, 1983; Central Queensland, Australia.
Galeodea nipponica Sakurai & Habe, 1961; Japan to Western Australia.
Galeodea rugosa (Linné, 1771); British Isles to West Africa and western part of Mediterranean.
Galeodea triganceae (Dell, 1953); eastern coast of New Zealand.

SYSTEMATICS

Family **CASSIDAE** Swainson, 1832

Genus ***Galeodea*** Link, 1807
Type species: *Buccinum echinophora* Linnaeus, 1758, Mediterranean.

Galeodea beui, spec. nov.
Figs 1, 2

Type material. Holotype MNHN, Paris height : 81,1 mm; greatest width : 51,8 mm.

Type locality. Off north-western Panglao, Philippine Islands; by tangle nets in 450-550 m, live-taken.

Description. Shell medium-sized for the genus, elongate-ovate, thin but solid; taller than wide (h/w = 1,5).
Protoconch consisting of 2 ½ whorls. Teleoconch of five whorls sculptured by regularly spaced spiral cords (about 55 on body whorl), bearing fine nodules on the early whorls. Shoulder of body whorl slightly angulate with 28 not very prominent but distinct nodules; another three nodule-bearing cords at midbody of body whorl. These cords always consist of three crowded spiral striae. Suture not distinctly incised; one stronger spiral cord just below the suture.
Parietal shield smooth, very thin. Aperture wide, semilunate; outer lip reflected backward, almost smooth. Anterior canal short, rather straight. No posterior nodule on outer lip present.
Basic colour yellowish to orangish white with very thin dirty greenish-brown translucent periostracum. Protoconch whitish; inside of outer lip and interior of aperture porcelain white; parietal callus transparent.
Operculum typical for *Galeodea*: corneous, ovate with a marginal nucleus; reddish-brown.

Discussion. Three other species of the genus *Galeodea* Link, 1807 are known in the Philippines: *leucodoma* (Figs 3, 4), *echinophorella* (Figs 5, 6) and *nipponica* (Figs 7, 8). These species differ from *Galeodea beui*, spec. nov. in the following features : (see Table 1)

	G. beui, spec. nov.	*G. echinophorella*	*G. nipponica*	*G. leucodoma*
Adult size	81,1 mm	up to 65 mm	up to 110 mm	up to 75 mm
Colour	yellowish to orangish-white	chalky white with a distinct orange patch on the back	chalky white	chalky white
Anterior canal	straight	curved backward	curved backward	rather straight
Posterior nodule on the outer lip	not present	present	not present	not present
Inside of outer lip	smooth	bearing obscure denticles	smooth	bearing distinct denticles
Shell	thin	thick	thick	thick
Spiral rows of nodules on the body whorl	4	3	3-5	6-7
Shape of nodules	not very prominent, low and rounded	prominent, sharply pointed	prominent, sharply pointed	prominent. rounded
Number of nodules on the shoulder spiral cord	28	13-16	19-23	27-31

Table 1. Comparison of *Galeodea* species.

Etymology. This new species is named after Dr Alan Beu, Institute of Geological and Nuclear Sciences, Lower Hutt, New Zealand.

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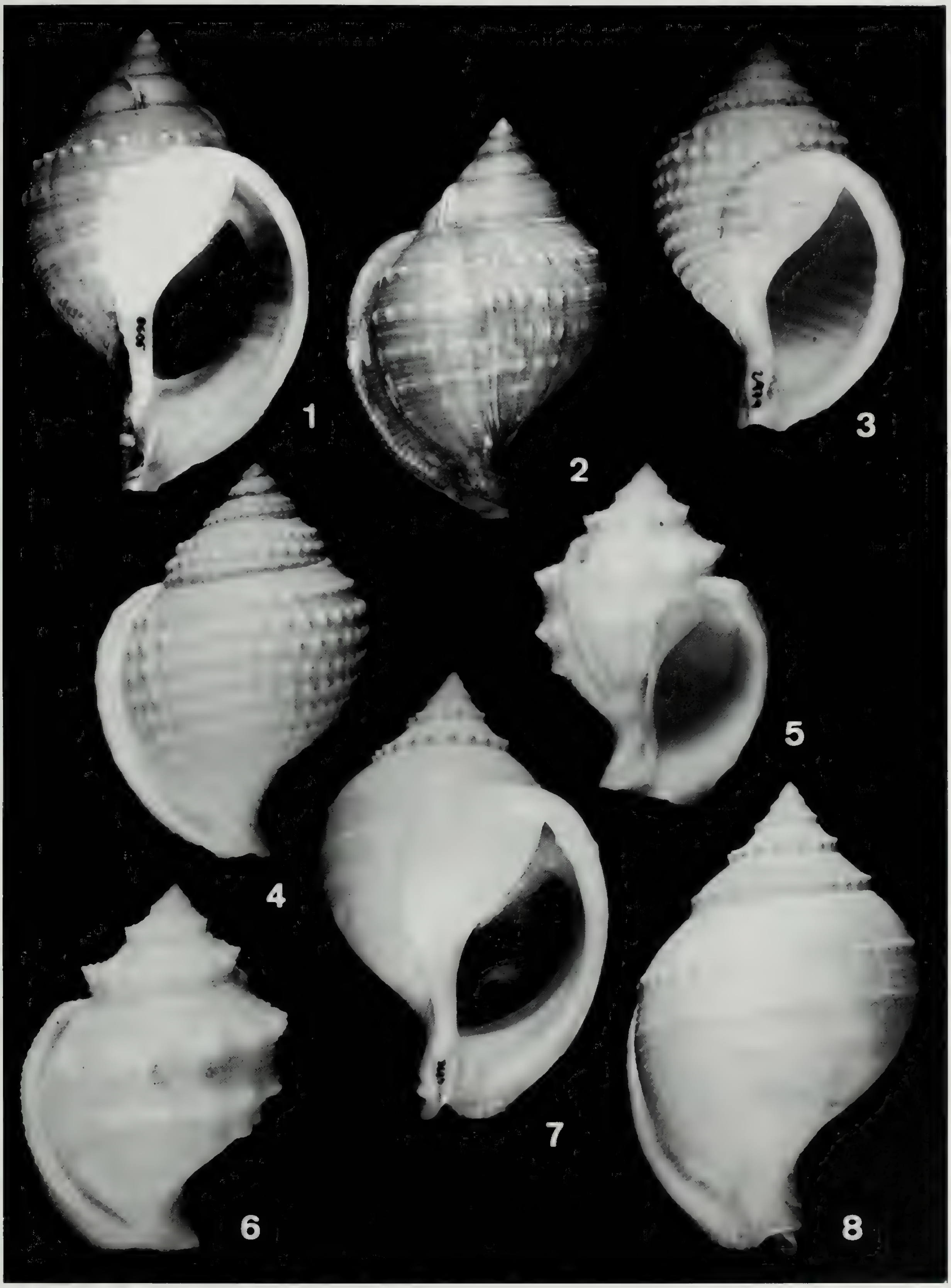
Remarks

All photographs by Uschi Damaschke, Möckmühl, Germany.

Figures 1-8

1-2. *Galeodea beui* spec. nov., 81, 1 mm x 51, 8 mm, Panglao, Bohol, Philippines. Dorsal and ventral view. Holotype MNHN. **3-4.** *Galeodea leucodoma* Dall, 1907, 61, 8 mm x 40, 9 mm, Honshu, Japan. Dorsal and ventral view, coll. K.Kreipl. **5-6.** *Galeodea echinophorella* Habe, 1961, 36, 9 mm x 25, 5 mm, Panglao, Bohol, Philippines. Dorsal and ventral view, coll. K.Kreipl. **7-8.** *Galeodea nipponica* Sakurai & Habe, 1961, 102, 7 mm x 69, 3 mm, Rowley Shoals, NW-Australia. Dorsal and ventral view, coll. K.Kreipl.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Description of five new marginellids from bathyal levels of southern New Caledonia

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KEYWORDS : Cystiscidae, Marginellidae, *Gibberula*, *Dentimargo*, *Protoginella*, bathyal levels, New Caledonia.

ABSTRACT : One species of *Gibberula*, three species of *Dentimargo*, and one species of *Protoginella* are described as new from bathyal levels south from New Caledonia. *Dentimargo caledonicus* (Cossignani, 2001) is redescribed and a new type locality is proposed. Some elements are given about the apparent distribution of the six species.

RESUME : Une espèce de *Gibberula*, trois espèces de *Dentimargo* et une espèce de *Protoginella* sont décrites comme nouvelles du bathyal au sud de la Nouvelle-Calédonie. *Dentimargo caledonicus* (Cossignani, 2001) est redécrit, et une nouvelle localité type est proposée. Quelques éléments relatifs à l'apparente distribution des six espèces sont présentés.

INTRODUCTION

In a precedent article (Boyer, 2001), the author presented a first set of ten bathyal marginellids collected south from New Caledonia and conserved in the Malacology department of the Muséum national d'Histoire naturelle. In view of this first article, few stations, as parts of four benthic campaigns, were checked.

A further work on the general marginellids collections from New Caledonia in MNHN led to have a better knowledge of this fauna, especially about some well-marked trends, like a very high diversity at the specific level (around 100 species of marginellids are represented from bathyal levels and apparently as many in infralittoral), numerous complexes of sibling species, and pronounced situations of endemism, even at the bathyal levels.

The diversity of marginellids from New Caledonia is also important at the generic level, the genus *Cysticus* (Cysticidae) being dominant in shallow water and the genus *Dentimargo* (Marginellidae) being dominant at the bathyal levels. This pattern is original compared to that one represented in the surrounding southwest pacific archipelagos (Vanuatu, Fiji and Tonga collections in MNHN) where the bathyal marginellids fauna is characterized by a wide diversity into the group *Serrata*. This contrasted situation will require to be interpreted on the ground of further inquiries.

This article is conceived as a complement to our previous paper. It devotes to the description of five new species which are especially well represented at the bathyal levels south from New Caledonia, or which present close affinities with such ones.

Cossignani (2001) described as new six species of marginellids said to come from Northern New Caledonia. One of these species, named as *Prunum caledonicum*, belongs in fact to an area ranging south from New Caledonia, where it is rather common in upper bathyal. The original description of this species being somewhat summary, a redescription is given hereunder together with full collecting references from MNHN material, and a new type locality is proposed.

The holotypes of these six new species were initially deposited in a private museum from Cupra Maritima, Italy. They were removed from this place by Dr Cossignani in December 2001 and deposited in MNHN.

Abbreviations

L = length; W = width; lv = live collected specimen; dd = dead collected specimen; ad = adult; juv = juvenile; fr = fragment; stn = station; N.C. = New Caledonia.

AMS = Australian Museum, Sydney; MMM = Mostra Mondiale Malacologia, Cupra Maritima; MNHN = Muséum national d' Histoire naturelle, Paris; NMNZ = National Museum of New Zealand; NSMT = National Science Museum, Tokyo.

SYSTEMATICS

Genus ***Gibberula*** Swainson, 1840
Type species : *Gibberula zonata* Swainson, 1840 (= *Volvaria oryza* Lamarck, 1822), by monotypy.

The genus *Gibberula* is not represented by many species in the bathyal levels of N.C. The species described as new hereunder is the largest sized *Gibberula* found off Southern N.C.

Gibberula nebulosa sp. nov.

Figs 1-3

Type material. Holotype (6.05 x 4.15 mm), MNHN (Fig. 1) : SMIB 8, stn DW 197-199.
Paratypes : 11 ad (L = 5.95 to 7 mm) and 2 juv, MNHN (Figs 2-3), same stn.

Material examined. *" Vauban"* 1978-1979 : stn 15, 22°49'S, 167°12'E, 390-395 m,1 lv. – stn 16, 22°46'S, 167°12'E, 390-400 m, 3 dd. – stn 37, 22°32'S, 166°26'E, 175-250 m, 1 dd. – stn 40, 22°30'S, 166°24'E, 250-350 m, 2 dd, 2 juv dd.
BIOCAL : stn DW 37, 23°00'S, 167°16'E, 350 m, 1dd. – stn 44, 22°47'S, 167°14'E, 440-450 m, 1 dd.
MUSORSTOM 4 : stn DW 210, 22°44'S, 167°09'E, 340-345 m, 1 dd. – stn DW 226, 22°47'S, 167°22'E, 390 m, 1 dd.
SMIB 8 : stns DW 197-199, 22°52'S-22°53'S, 168°12'E –168°13'E, 408-436 m, 1lv (holotype Fig. 1), 2 juv lv (paratypes), 11 dd (paratypes Figs 2-3).
BATHUS 2 : stn DW 729, 22°52'S, 167°12'E, 400 m, 1 lv, 1 juv lv, 5 dd, 1 fr – stn DW 739, 22°35'S, 166°27'E, 465-525 m, 4 dd.

Type locality. SMIB 8, stns DW 197-199, 22°52'S-22°53'S, 168°12'E-168°13'E, 408-436 m, off Ile des Pins, southeast of Grand Récif Sud, N.C., bathyal.

Description. Shell ovate subcylindrical, moderately slender; protoconch small, paucispiral, hyalinous grey, very faintly produced and partially covered by callous enamel of the last whorl of the spire, spire mostly sunken; aperture as long as the entire shell, narrowed, slightly widened towards the base, labrum faintly sinuous, labial denticles faint or lacking, faintly developed lirations within the inner lip, thin but distinct labial margin, making a strong oblique varix at the base of the dorsum; parietal border faintly convex, 3 visible columellar plaits, the two first ones being the strongest, one to several lirations on the parietal wall, well-incised siphonal notch; ground colour whitish, spire whorls brownish, body whorl covered by a lattice pattern of crossing diagonal flammules, making a nebulous appearance.

Distribution. Southern N.C. (22°30'S to 23°00'S; 166°24'E to 167°22'E). Bathyal : lv in 395-436 m, dd in 250-465 m.

Remarks. The morphology and the decoration of the shells are very constant. Their size range is L = 5.4 to 7.1 mm, W = 3.4 to 4.1 mm.
G. nebulosa sp. nov. must be considered as a sibling species of the northern *G. quemeneri* (Cossignani, 2001), which shows stronger lirations but a fainter labial margin and a whitish concave spire, whereas *G. nebulosa* has a brownish faintly convex one. The decoration of *G. quemeneri* presents two extreme phases : a basic pattern of zic-zac axial yellowish lines, which may coexist with several blade-like spiral bands of the same colour. The axial lines may be lacking, a pattern of spiral bands and flammules may ornate the entire shell. However, this last pattern does not show any trend of crossing or merging and appears as structurally different from that one of *G. nebulosa.*
G. nebulosa is not represented in the MNHN collections from Northern N.C., and the two sibling species appear as being non-sympatric at both ends of N.C.
The scarce samplings made off Western N.C. do not allow to verify if both species are succeeding, overlapping or lacking in this area.

Etymology. Referring to the nebulous aspect of the shell decoration.

Genus *Dentimargo* Cossmann, 1899

Type species : *Marginella dentifera* Lamarck, 1803, by original designation.

Dentimargo caledonicus (Cossignani, 2001)

Figs 3-6

Prunum caledonicum - COSSIGNANI, 2001, p. 15.

Holotype 14.33 x 7.00 mm, MNHN. Type locality : Grand Passage, Northern N.C.

Materiel examined. SUD POINTE GRAND RÉCIF, 1976 : 200 m, 1 dd.
"*Vauban*" 1978-79 : stn 15, 22°49'S, 167°12'E, 390-395 m, 2 dd. – stn 16, 22°46'S, 167°12'E, 390-400 m, 1 dd.
BIOCAL : stn DW 38, 23°00'S, 167°15'E, 360 m, 1 dd.– stn DW 44, 22°47'S, 167°14'E, 440-450 m, 1 lv, 1 juv lv, 9 dd, 2 juv dd.
MUSORSTOM 4 : stn DW 212, 22°47'S, 167°10'E, 375-380 m, 7 dd, 1 juv dd. – stn DW 222, 22°58'S, 167°33'E, 410-440 m, 1 lv, 4 juv lv, 1 dd.– stn DW 229, 22°51'S, 167°13'E, 445-460 m, 1 dd.
SMIB 1 : stn DW 2, 22°52'S, 167°13'E, 415 m, 2 dd.
SMIB 2 :stn DW 1, 22°53'S, 167°13'E, 438-444 m, 2 dd. – stn DW 3, 22°56'S, 167°15'E, 412-428 m, 2 juv lv, 2 dd. –stn DW 6, 22°56'S, 167°16'E, 442-460 m, 1 dd.– stn DW 14, 22°53'S, 167°13'E, 405-444 m, 1 lv.
SMIB 3 : stn DW 29, 22°47'S, 167°12'E, 405 m, 2 dd.
SMIB 8, stns DW 197-199, 22°52'S-22°53'S, 168°12'E-168°13'E, 408-436 m, 3 lv (Figs 4-6), 1 juv lv, 22 dd, 1 juv dd.– stn DW 200, 23°00'S, 168°21'E, 514-525 m,1 dd.

BATHUS 2 : stn DW 719, 22°48'S, 167°16'E, 444-445 m, 8 dd, 1 juv dd. – stn DW 729, 22°52'S, 167°12'E, 400 m, 5 dd. – stn DW 730, 23°03'S, 166°58'E, 397-400 m, 1 dd.

Description. Shell subcylindrical, slender; protoconch medium sized, low, moderately wide, paucispiral; spire moderate, regularly conical, non-stepped, made of 3 whorls, representing around 30 % of the total length; aperture widely opened towards the base, labrum straight and vertical, the small upper labial denticle is principally made by the depression of the anal canal, inner labrum smooth or very faintly denticulate, external margin moderately thickened, bordered by a deep groove on the backside, shoulder of the labrum stepped; parietal border oblique and straight, the columellar zone being faintly concave and bearing 4 columellar plaits, the first two ones being oblique and subequal, the third one almost horizontal, and the fourth nearly perpendicular to the parietal border; a pronounced wide varix is generally apparent towards the ventral base of the body whorl, at the level of the columellar plaits; ground colour horny to amber, with one orange spiral band at the top of the body whorl, one orange spiral line a short distance below, another spiral line behind the basal callosity and a lower spiral line are present on the spire whorls, all these bands and lines are discontinuous, only the lines are extending on the labial margin.

Distribution. Southern N.C. (22°46'S to 23°00'S, 167°10'E to 167°33'E). Bathyal : lv in 436-440 m, dd in 200-514 m.

Remarks. The morphology and the decoration of the shells are very constant. Their size range is : L = 12.2 to 16.8 mm, W = 6.2 to 7.6 mm. The species is not represented in the MNHN collections from Northern N.C. and seems to be restricted to the Southern N.C.
The replacement of the species within the genus *Dentimargo* is based on the presence of a sharp denticle at the upper part of the inner labrum and of small denticles below.
Dr Cossignani founded this species on two specimens reported from a northern station. This record seems to be erroneous, and the type locality is changed here as "south of N.C., bathyal".

***Dentimargo tropicensis* sp. nov.**

Figs 7-9

Type material
Holotype (13 x 5.7 mm), MNHN (Figs 7-8) : SMIB 8, stn DW 182-184.
Paratypes : 3 ad (L = 11 to 11.6 mm) and 10 juv, MNHN (Fig. 9): same stn.

Material examined. SMIB 8 : stns DW 182-184, 23°18'S, 168°05'E, 305-367 m, 3 lv (holotype Figs 7-8, 2 paratypes Fig. 9), 10 juv lv (paratypes), 1 dd (paratype). – stn DW 189, 23°18'S ,168°06'E, 400-402 m, 2 lv, 2 juv lv. – stn DW 190, 23°18'S, 168°05'E, 305-310 m, 5 juv lv, 1 juv dd.
BATHUS 3 : stn DW 830, 23°20'S, 168°01'E, 361-365 m, 1 dd.

Type locality. SMIB 8, stn DW 182-184, 23°18'S, 168°05'E, 305-367 m, Banc Aztèque, Northern Norfolk ridge.

Description. Shell slender biconical, narrow; protoconch domed, medium sized, paucispiral; spire high and produced, made of 3 ¾ whorls faintly convex and representing more than 35 % of the total length; aperture very narrowed, labrum faintly arched, the small upper labial denticle fastens an enclosed anal canal, the produced inner labrum enveloping the aperture, bearing 15 smaller denticles, the lower one making like a button-like varix inside the aperture, beside the siphonal canal ; external margin moderately thickened, bordered by a deep groove on the backside, shoulder of the labrum stepped; parietal border oblique and straight, the columellar zone being faintly concave and bearing 4 columellar plaits, the first two ones being oblique and subequal, the third one almost horizontal, and the fourth nearly perpendicular to the parietal border; ground colour flesh beige, with one orange spiral band at the top of the body whorl, one orange spiral line a short distance below, another spiral line and a basal band at the level of the columellar plaits, the upper spiral band and the lower spiral line being also present on the spire whorls, all these bands and lines are generally discontinuous, the extensions of the lines on the labial margin are present even when the lines are lacking.

Distribution. Northern Norfolk ridge (23°03'S to 23°20'S, 166°58'E to 168°06'E). Bathyal : lv in 310-400 m, dd in 310-397 m.

Remarks. The morphology of the shell is somewhat variable in its restricted range of distribution. The specimens collected on Banc Aztèque (SMIB 8, stns 182-184 and stn 189) are more variable, as well for their outline (from very narrow and slender fusiform to squat biconical) than for their decoration (from uniformly deep greenish yellow or golden amber to milky white with dark orange marks) and other features (as the relative thickness and denticulation of the inner labrum). The size range of the shells is : L = 11 to 13 mm, W = 5 to 5.7 mm.
D. tropicensis sp. nov. shows close similarities with *D. caledonicus*.
It differs from this last species principally on the ground of its much-narrowed aperture, attenuated base, narrow outline and length/width ratio.

It must be underlined that both species are not overlapping, but on the contrary their geographic ranges are following according to a very steep manner : between the specimen of *D. caledonicus* from SMIB 8, stn DW 200 (23°00'S, 168°21'E) and the specimens of *D. tropicensis* from SMIB 8, stn DW 189 (23°18'S, 168°06'E), which are in the closest vicinity, we do not verify any tendency to intergrading. So, it seems that we are in the case of an "insular isolation", *D. tropicensis* having speciated on the submarine relieves ("guyots") situated at the north of the Norfolk ridge, from an ancestral population belonging to the *D. caledonicus* lineage. A very small shell of D. caledonicus, collected in BATHUS 2, stn DW 730, is somewhat comparable to D. tropicensis, but not with a so slender outline and a so attenuated base. Its ground colour is horny and the inner lip is smooth below the upper denticle.
D. tropicensis is also very close to *D. alisae* Boyer, 2001 and to *D. virginiae* Boyer 2001, these three species living sympatrically in the stn 190 of SMIB 8. *D. tropicensis* differs from *D. alisae* principally by its larger shell and protoconch, by its less produced spire and by its discontinuous pattern of decoration which better remembers that one of *D. caledonicus.* These four species show like representants of a descendant lineage.

Etymology. Referring to the range of distribution of the species, approximatively situated under the tropic of Capricorn.

Dentimargo cingulatus sp.nov.

Figs 10-12

Type material. Holotype (9.4 x 5 mm), MNHN (Figs 10-11) : SMIB 8.
Paratypes : 12 ad (L = 9 to 12.2 mm) + 3 juv, MNHN (Fig. 12) : same stn.

Material examined. BIOCAL : stn DW 44, 22°47'S, 167°14'E, 440-450 m, 4 juv lv, 8 dd, 4 juv dd.
MUSORSTOM 4 : stn DW 222, 22°58'S, 167°33'E, 410-440 m, 4 dd. – stn DW 229, 22°51'S, 167°13'E, 445-460 m, 1 lv, 2 juv lv. – stn DW 230, 22°52'S, 167°12'E, 390-420 m, 2 lv, 3 juv lv.
SMIB 2 : stn DW 3, 22°56'S, 167°15'E, 412-428 m, 2 dd, 1 juv dd. – stn DW 6, 22°56'S, 167°16'E, 442-460 m, 1 dd. – stn DW 9, 22°54'S, 167°15'E, 475-500 m, 1 lv, 2 dd. – stn DW 17, 22°55'S, 167°15'E, 428-448 m, 1 lv.
SMIB 3 : stn CP 4, 24°54'S, 168°22'E, 530 m, 2 lv.
SMIB 8 : stns DW 197-199, 22°52'S-22°53'S, 168°12'E-168°13'E, 408-436 m, 2 lv (holotype Figs 10-11, 1 paratype Fig 12), 2 juv lv (paratypes), 11 dd (paratypes), 1 juv dd (paratype). – stn DW 201, 22°59'S, 168°21'E, 500-504 m, 1 dd.
BATHUS 2 : stn DW 719, 22°48'S, 167°16'E, 444-445 m, 4 dd.

Type locality. SMIB 8, stn DW 197-199, 22°52'S-22°53'S, 168°12'E-168°13'E, 408-436 m, off Ile des Pins, southeast of Grand Récif Sud, N.C., bathyal.

Description. Shell biconical somewhat oval, moderately slender; protoconch small, narrow and tall, paucispiral; spire regularly conical, non-stepped, representing around 30% of the total length; aperture moderately opened, labrum not arched, faintly oblique, one small denticle at the upper part of inner labrum, lower denticles very faint, external margin thick, shoulder of the labrum faintly stepped; parietal border moderately concave, 4 strong columellar plaits, the first two ones being oblique and subequal, the third almost horizontal, and the fourth nearly perpendicular to the parietal border; ground colour white, 2 well defined spiral orange lines on the body whorl recovering the labial margin, a third orange line above the lower suture, a fourth one suggested above the next suture.
Dry animals are orange coloured.

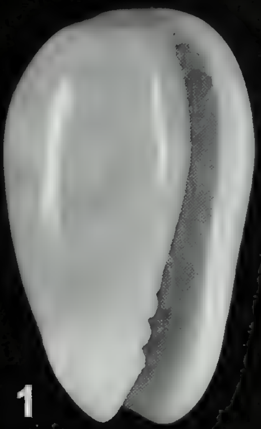
Distribution. South from N.C. to Northern Norfolk ridge (22°47'S to 24°54'S; 167°12'E to 168°22'E). Bathyal : lv in 420-530 m, dd in 428-500 m.

Remarks. The morphology of the shell is very constant all along its wide range of distribution. The size range is : L = 9 to 12.2 mm, W = 4.5 to 6 mm.
The spiral decoration may be very erased or lacking.
A group of similar forms, possibly polyspecific, is represented in Northern N.C. It can be distinguished from *D. cingulatus* sp. nov. by the presence of much wider protoconchs and stronger stepped spires. *Dentimargo guionneti* Cossignani, 2001 belongs to this northern group.

Etymology. Referring to the spiral decoration of the shell.

Figures 1-9

1. *Gibberula nebulosa*, holotype, 6.8 x 4.15 mm. **2**. *Gibberula nebulosa*, paratype, 6.15 x 3.65 mm.
3. *G. nebulosa*, paratype, 7.1 x 4 mm. **4-5**. *Dentimargo caledonicus*, 15 x 7 mm, SMIB 8, stn DW 197-199.
6. *D. caledonicus* 16 x 7.25 mm, SMIB 8, stn 197-199. **7-8**. *D. tropicensis*, holotype, 13 x 5.7 mm.
9. *D. tropicensis*, paratype, 11.45 x 5.6 mm.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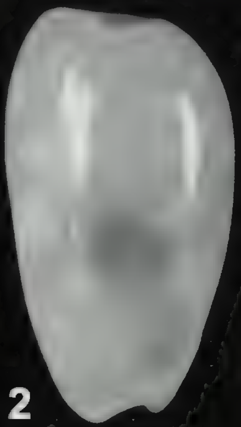
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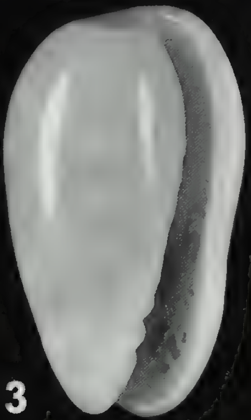
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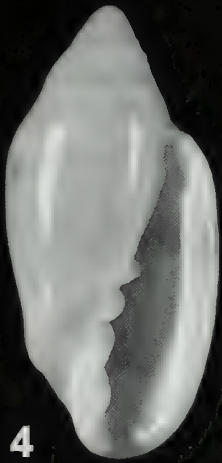
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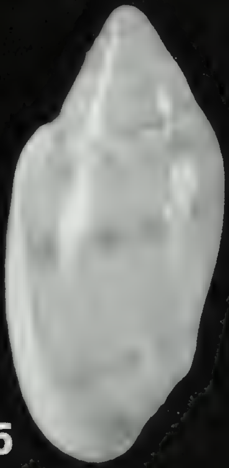
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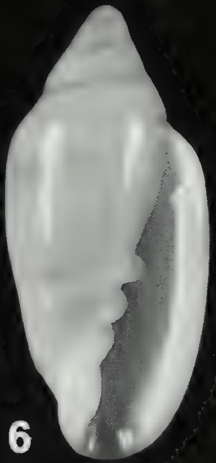
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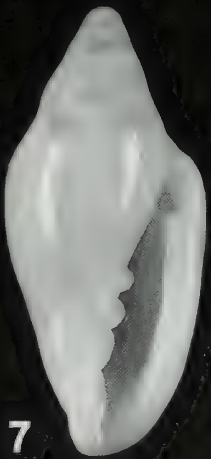
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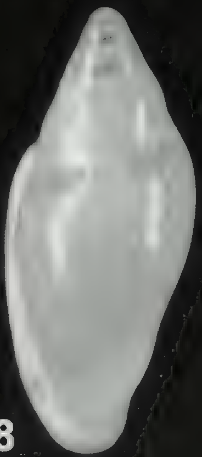
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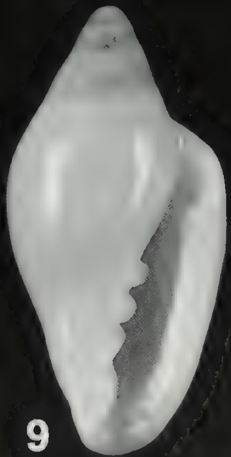
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Dentimargo biocal sp. nov.
Figs 13-15

Type material. Holotype (6.4 x 3.8 mm), MNHN (Figs 13-14) : BIOCAL, stn DW 44.
Paratypes : 72 ad (L = 6.2 to 8.8 mm) + 20 juv, 14 ad + 8 juv (alc), MNHN; 2 ad, AMS; 2 ad, NMNZ; 1 ad, NSMT; 1 ad, MMM. Same stn.

Material examined. "*Vauban*" 1978-79 : stn 2, 22°17'S, 167°14'E, 425-430 m, 1 lv, 1 juv lv, 14 dd, 2 juv dd.– stn 3, 22°17'S, 167°12'E, 390 m, 4 dd. – stn 4, 22°17'S, 167°13'E, 400 m, 1 dd.
BIOCAL : stn DW 44, 22°47'S, 167°14'E, 440-450 m, 17 lv (holotype Figs 13-14, 16 paratypes), 13 juv lv (paratypes), 79 dd (paratypes), 12 juv dd (paratypes). – stn DW 77, 22°15'S, 167°15'E, 440 m, 1 lv, 1 juv lv, 14 dd, 1 juv dd.
MUSORSTOM 4 : stn DW 212, 22°47'S, 167°10'E, 375-380 m, 1 dd. – stn DW 222, 22°58'S, 167°33'E, 410-440 m, 2 dd, 1 juv dd. – stn DW 230, 22° 52'S, 167°12'E, 390-420 m, 1 dd.
SMIB 8 : stns DW 197-199, 22°52'S-22°53'S, 168°12'E-168°13'E, 408-436 m, 1 lv, 6 dd.
BATHUS 2 : stn DW 719, 22°48'S, 167°16'E, 444-445 m, 19 dd, 1 juv dd. – stn DW 723, 22°50'S, 167°27'E, 430-433 m, 2 dd. – stn DW 724, 22°48'S, 167°26'E, 344-358 m, 1 dd. – stn DW 729 22°52'S, 167°12'E, 400 m, 1 dd.
As *D.* cf. *biocal* :
BATHUS 3 : stn DW 818, 23°44'S, 168°16'E, 394-401 m, 1 juv lv, 4 dd (Fig. 15).

Type locality. BIOCAL, stn DW 44, 22°47'S, 167°14'E, 440-450 m, Southern N.C., bathyal.

Description. Shell somewhat biconical-oval, squat; protoconch wide and low, paucispiral, spire short, rather obtuse and blunted, representing 22% of the total length, 2 thin spire whorls, the upper one being very short and somewhat indistinct; body whorl rounded and inflated; aperture moderately opened, labrum arched, faintly oblique; one very small denticle at the upper part of inner labrum, lower denticles faintly distinct; external margin thick, shoulder of the labrum non-stepped; columellar border somewhat concave, bearing 4 plaits, the first two ones oblique and subequal, the third one almost horizontal and the fourth one nearly perpendicular to the parietal border; ground colour light greenish-yellow. Wet animals are creamy beige (BIOCAL, stn DW 44), dry animals are orange (SMIB 8, DW 197-199).

Distribution. South from N.C. to Northern Norfolk ridge (22°15'S to 22°58'S, 167°10'E to 167°33'E). Bathyal : lv in 430-440 m, dd in 358- 444 m.

Remarks. Despite its variation in relative length of spire , the shell morphology of *D. biocal* is very constant along its range of distribution. The size range is : L = 6.2 to 8.8 mm, W = 3.6 to 5 mm. Depending on localities, the shells may show 2 orange marks on the backside of the margin, on a creamy-white ground.
The single lot collected on the northern slopes of the Norfolk ridge (BATHUS 3, stn DW 818) displays shells with a similar morphology, but with a smaller protoconch, a more produced spire, a shorter aperture, a more receding labial shoulder and a pronounced orange decoration (Fig. 15). The entire shell is light orange, with 2 thin orange bands on the body whorl, another one behind the lower suture, and a dark orange zone covering all the base of the shell. This lot, labelled as *D.* cf. *biocal*, may represent a sibling species restricted to a part of Northern Norfolk ridge.
D. biocal is not represented in MNHN collections from Northern N.C.

Etymology. Referring to the campaign BIOCAL which yielded the most important lot of specimens.

Genus *Protoginella* Laseron, 1957
Type species : *Marginella lavigata* Brazier, 1877, by original designation.

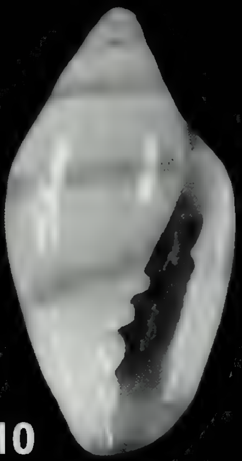
A phena labelled as *P.* cf. *caledonica* in Boyer (2001) can be confirmed as constituting a new species widely distributed in Southern N.C. and Northern Norfolk ridge. This species is described hereunder.

Protoginella maestratii sp. nov
Figs 16-20

Type material. Holotype (8.3 x 4.7 mm), MNHN (Fig. 17) : MUSORSTOM 4, stn DW 212.
Paratypes : 6 ad (L = 7.4 to 8.3 mm), 7 ad (alc), MNHN; 2 ad, AMS; 2 ad, NMNZ; 1 ad, NSMT; 1 ad, MMM. Same stn.

Figures 10-18

10-11. *Dentimargo cingulatus*, holotype, 9.4 x 5 mm. **12**. *D. cingulatus*, paratype, 9.35 x 5.05 mm. **13-14**. *D. biocal,* holotype, 6.4 x 3.8 mm. **15**. *D.* cf *biocal,* 7.3 x 4.05 mm. **16**. *Protoginella* cf. *maestratii*, 7.25 x 4.5 mm, MUSORSTOM 4, stn DW 224. **17**. *P. maestratii,* holotype, 8.3 x 4.7 mm. **18**. *P. maestratii,* 7.6 x 4.9 mm, BATHUS 2, stn DW 729.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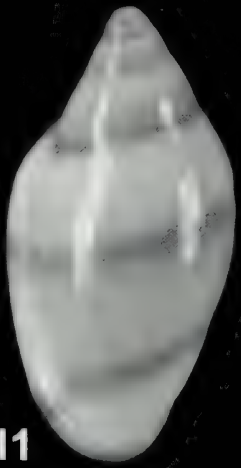
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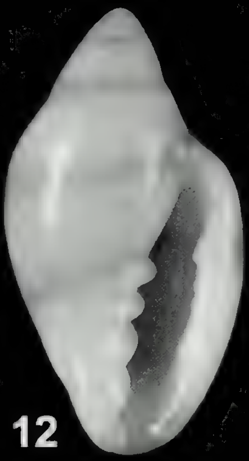
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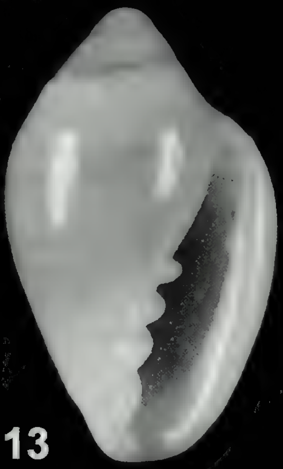
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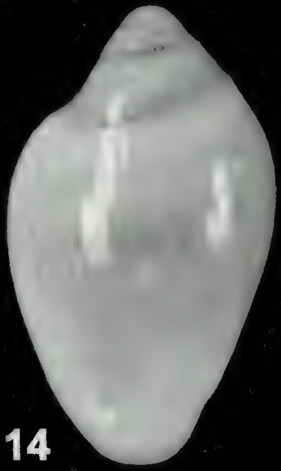
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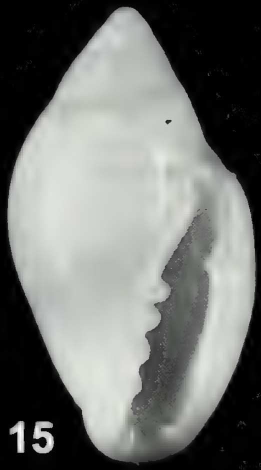
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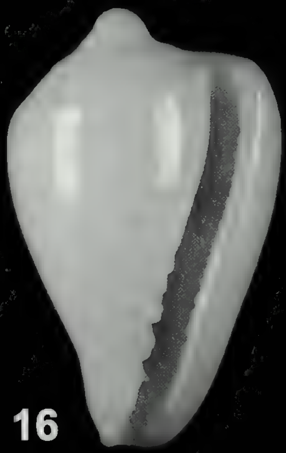
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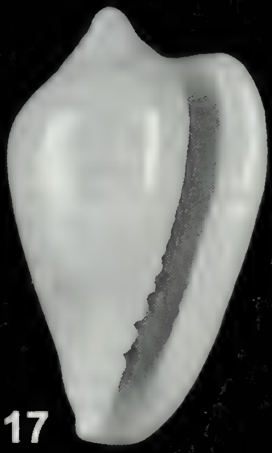
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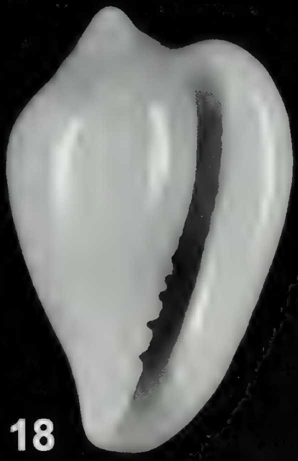
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Material examined. "*Vauban*" 1978-79 : stn 15, 22°49'S, 167°12'E, 390-395 m, 2 dd. – stn 16, 22°46'S, 167°12'E, 390-400 m, 1 lv, 5 dd, 1 fr.
BIOCAL : stn DW 37, 23°00'S, 167°16'E, 350 m, 3 dd. – stn DW 38, 23°00'S, 167°15'E, 360 m, 1juv lv, 1 dd. – stn DW 44, 22°47'S, 167°14'E, 440-450 m, 36 lv, 3 juv lv, 82 dd, 8 juv dd. – stn DW 46, 22°53'S, 167°17'E, 570-610 m, 2 lv, 1 juv lv, 142 dd, 46 juv dd. – stn DW 49, 23°03'S, 167°32'E, 825-830 m, 1 dd. – stn DW 53, 23°09'S, 167°43'E, 975-1005 m, 2 dd. – stn DW 77, 22°15'S, 167°15'E, 440 m, 5 lv, 2 dd.
MUSORSTOM 4 : stn DW 212, 22°47'S, 167°10'E, 375-380 m, 7 lv (paratypes), 13 dd (holotype Fig. 17, 12 paratypes). – stn DW 219, 23°02'S, 167°33'E, 750 m, 1 dd. – stn DW 220, 22°58'S, 167°38'E, 505-550m, 1 dd. – stn DW 221, 22°59'S, 167°37'E, 535-560 m, 1 dd. – stn DW 222, 22°58'S, 167°33'E, 410-440 m, 7 lv, 4 dd. – stn DW 223, 22°57'S, 167°30'E, 545-560 m, 1 dd. – stn DW 224, 22°55'S, 167°27'E, 575-595 m, 3 dd (Fig. 16). – stn DW 230, 22°52'S, 167°12'E, 390-420 m, 1 dd.
SMIB 1: stn DW 2, 22°52'S, 167°13'E, 415 m, 2 lv (1 used for radula extraction), 1 dd.
SMIB 2 : stn DW 3, 22°56'S, 167°15'E, 412-428 m, 1 dd.– stn DW 5, 22°56'S, 167°14'E, 398-410 m, 2 dd. – stn DW 6, 22°56'S, 167°16'E, 442-460 m, 1lv. – stn DW 9, 22°54'S, 167°15'E, 475-500 m, 1dd. – stn DW 16, 22°51'S, 167°12'E, 390 m, 2dd.
SMIB 3 : stn CP 4, 24°54'S, 168°22'E, 530 m, 1 lv, 2 dd.
BERYX 11: stn DW 27, 23°37'S, 167°41'E, 460-470 m, 2 lv.
SMIB 8 : stn DW 166, 23°38'S, 167°43'E, 433-450 m, 6 dd. – stn DW 167, 23°38'S, 167°43'E, 430-452 m, 3 dd. – stn DW 169, 23°37'S, 167°42'E, 447-450 m, 3 lv, 1 dd. – stns DW 182-184, 23°18'S-23°19'S, 168°05'E, 305-367 m, 1 juv lv, 5 dd. – stn DW 189, 23°18'S, 168°06'E, 400-402 m, 11 dd. – stn DW 190, 23°18'S, 168°05'E, 305-310 m, 1 dd. – stns DW 197-199, 22°52'S-22°53'S, 168°12'E-168°13'E, 408-436 m, 38 dd.
BATHUS 2 : stn DW 719, 22°48'S, 167°16'E, 444-445 m, 9 dd. – stn DW 720, 22°52'S, 167°16'E, 530-541 m, 1 lv, 36 dd, 1 juv dd. – stn DW 721, 22°54'S, 167°17'E, 525-547 m, 28 dd, 6 juv dd. – stn DW 723, 22°50'S, 167°27'E, 430-433 m, 3 lv, 6 dd. – stn DW 729, 22°52'S, 167°12'E, 400 m, 1 lv (Fig. 18), 2 juv lv, 1dd.
BATHUS 3, stn DW 830, 23°20'S, 168°01'E, 361-365 m, 2dd.

Type locality. MUSORSTOM 4, stn DW 212, 22°47'S, 167°10'E, 375-380 m, west-southwest off Ile des Pins, east of Grand Récif Sud, N.C., bathyal.

Description. Shell white, subpellucid, triangular, eratoiform, squat, very widening at the level of the shoulder and very attenuated towards the base; spire short, narrow and pointed, non turriculated; protoconch narrow and produced, paucispiral; aperture, moderately widened, faintly but regularly curved, inner labrum thickened, somewhat enveloping, bearing around 25 very faint denticles, upper labrum sticking out backwards and producing above the anal canal, outer margin very thickened; parietal callus making an axial crest continuous and pronounced; 5 columellar plaits making faint crenelations in the parietal callus, the first plait is long and very oblique, the second and the third ones are thick and faintly biplicate and incised at the level of the parietal callus, without visible external varix, the fourth and fifth are smaller and simple, but well distinct.
Animal : based on 3 well-conserved dry specimens (BATHUS 2, stn DW 723), foot yellowish with violet marks, mantle light violet with small violet stains on the border, siphon light violet with a darker tip.
Radula : examined and pictured from one specimen (SMIB 1, stn DW2, L = 6.8 mm). Type 5 modified (Figs 19-20), plates bearing 20 to 23 cusps, large and small alterning, with a large central cusp very produced, frontline of the cusps almost rectilinear.

Distribution. South from N.C. to Northern Norfolk ridge (22°46'S to 24°54'S, 167°12'E to 168°22'E). Bathyal : lv in 360-570 m, dd in 310-975 m.

Remarks. *P. maestratii* sp. nov. presents a very variable shell morphology, depending on the populations considered : the spire may be very narrow and produced in some populations, or squat and stepped in others; the labrum may be arched, highly produced and very thickened, without visible denticles, or more straight, angular and widening at the level of the shoulder and distinctly denticulated, or low streamlined, deeply enveloping the aperture in its medium part, with strong denticulations; the columellar plaits may be very faintly produced or sharply standing out, the fourth plait being always limited to a simple liration, whereas the fifth one is often strongly biplicated and sharply stepped. Very callous shells are frequent (Fig. 18).
Even if rarely occurring within such or such population, some sympatric specimens intergrading these forms are however observed.
The size range of the shell is : L = 5.05 to 10 mm, W = 3.3 to 6.05 mm. The size of the shells tends to be larger near from N.C. mainland and to become smaller southward (the 2 very large shells from the deep station DW 53-BIOCAL constituting an exception), reaching its minimal on Banc Stylaster, situated west from the Norfolk ridge (SMIB 8, stns 166, 167 & 169). On the eastern side of the Norfolk ridge (Banc Aztèque : SMIB 8, stns DW 182-184, 189, 190), *P. maestratii* presents larger specimens.
P. maestratii differs from *P. laseroni* Boyer, 2001, principally by its more produced and sharper spire, its more elevated labial shoulder, its smaller and

more numerous labial denticles, and the presence of 5 columellar plaits instead of 4.

P. maestratii differs from *P. caledonica* Boyer, 2001, principally by its more heart-shaped outline and its smaller and sharper protoconch, its less slender base, its enveloping and more elevated labrum, and its slightly more widened aperture. *P. maestratii* is generally squatter and more callous.

Although *P. maestratii* and *P. caledonica* must be considered as sibling species and despite the important material at hand, very few shells can be considered as intergrading. These few shells come from BIOCAL, stn DW 49 and MUSORSTOM 4, stns 220, 223 & 224 (Fig. 16).

The smallest specimens of *P. maestratii* have the same size than the specimens of *P. laseroni,* and the largest ones have the same size than many *P. caledonica,* both being sympatric with *P. maestratii* in very few stations :

P. maestratii was found with *P. laseroni* in SMIB 8, stns DW 182-184 & 190;

P. maestratii was found with *P. caledonica* in MUSORSTOM 4, stns DW 219, 220 & 221, each time as single shells (the one from stn DW 220 is considered as intergrading).

The scarce sympatry of *P. maestratii* with *P. laseroni* is due to the fact that *P. laseroni* is apparently endemic from one seamount from the Norfolk ridge, where *P. maestratii* might be at the upper and/or southern limit of its range of distribution.

The scarce sympatry of *P. maestratii* with *P. caledonica* is more surprising, as both species present more or less the same ranges of geographic and bathymetric distribution from Southern N.C. to the northern slopes of the Norfolk ridge. This kind of pattern is generally representative of a polymorphic species ranging along a bathymetric and/or a geographic cline. However, a better look on the compared bathymetry of both phenae shows that 70% of the stations where *P. maestratii* was sampled are situated in 350-500 m, whereas 70% of the stations where *P. caledonica* was sampled are situated in 500-700 m. Despite these different bathymetric preferences, the scarcity of sympatric occurrences must have a complementary explanation. The compared geographic distribution of both phenae does not reveal any coherent pattern. The dominant light and slender form of *P. caledonica,* with narrow aperture and large bulbous protoconch, is found all along the bathyal plains situated south from N.C., as is found the dominant callous and heart-shaped form of *P. maestratii* with more widened aperture and small protoconch.

As the cases of close similarities between both phenae are very limited and as the differences between both phenae are not based on a bathymetric or a geographic ground, the possibility of a cline of forms linking two phenae belonging to a single species cannot be accepted. The simplest explanation is that *P. maestratii* and *P. caledonica* are sibling species which have any kind of different requirement which leads them to occupy different places.

Even if reaching also the north of the Norfolk ridge, *P. caledonica* does not settle the upper levels of the banks, as *P. maestratii* does on Banc Aztèque (310-400 m) and on Banc Stylaster (450-460 m).

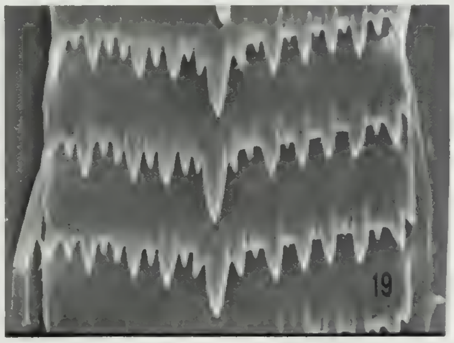
Like *P. laseroni* and *P. caledonica, P. maestratii* is not represented in the MNHN collections from Northern N.C., where the diversity of *Protoginella* species seems to be less important.

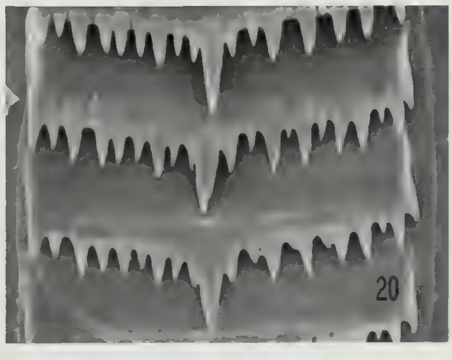
The chromatism of the animal of *P. maestratii* seems to be very close to that one of *P. laseroni.*

The radula of *P. maestratii* (Figs 19-20) differs strongly from that one of *P. laseroni* (BOYER 2001 : 168) as the later presents the classic corner-patterned plate with reduced number of cusps found in the group *Mesoginella* (sensu COOVERT & COOVERT, 1995), whereas the former shows a pattern of plates much closer to that one of some species belonging to the complex *Volvarina-Serrata (comblike pattern).*

So, the study of the radulae of all the species of *Protoginella* might be of interest for the understanding of the possible relationship between the group *Mesoginella* and the complex *Volvarina-Serrata.*

Etymology. The species is dedicated to Philippe Maestratii (MNHN), who valuably contributed to the building up of the New Caledonian collections of molluscs, and who sorted out most of the shells with such a patience and such a discriminating eye.





19-20 : radula from *Protoginella maestratii* (x 835), SMIB 1, stn DW 2.

DISCUSSION

On the ground of the observations reported in the present article and of the data from the previous one (BOYER, 2001), we can distinguish the outlines of an original pattern of distribution in the bathyal marginellid gastropods from N.C.

Each of the 16 species presented by us from Southern N.C. appears as lacking in Northern N.C., and it seems that none of the phenae examined from the northern stations is also found in the southern area, except the large *Volvarina armonica* Cossignani, 1997 which is apparently distributed all around the New Caledonia mainland at circalittoral and upper bathyal levels. So, a steep separation seems to occur at the specific level between the northern and the southern bathyal fauna from N.C., at least for small neogastropods having a direct (non-planktotrophic) development such as marginellids. The choppy relieves laying off the west and east coasts of N.C. at bathyal levels are apparently the place for special microenvironments favourable to the development of local endemisms and working like barriers preventing the diffusion of northern and southern populations. This situation remains to be fully documented and interpreted.

Superposed to this general pattern, a normal tendency to endemism seems to occur on the seamounts ranging upon the Northern Norfolk ridge. Depending on the species, the distribution of the seamounts marginellids seems however to be irregular and may be the result of very complex influences. The evolution history of this kind of endemism may be the matter of another process than the one working about the specific separation between northern and southern new-caledonian faunas.

The development of the study of MNHN marginellids collections may allow to interpret also the respective influences in the formation of the biodiversity observed at bathyal levels between New Caledonia and surrounding archipelagos.

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Powell, A.W.B. 1979. *New Zealand Mollusca. Marine, land and freshwater shells.* William Collins Publishers Ltd: xiv + 500 pp.
Mayr, E. 1989. Attaching names to objects. In: *What the philosophy of biology is : essays for David Hull* (M. Ruse, ed.), Klumer Academic, Dordrecht: 235-243.

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VIE DE LA SOCIETE LIFE OF THE SOCIETY

Bivalves et Crustacés - illustrations d'une association

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MOTS CLES / KEY WORDS

Europe - Mollusca - Bivalvia - Crustacea - Decapoda - Pinnotheres - Pontonia - Association.

RESUME

Notes et illustrations de l'association observée entre des crustacés Decapoda Brachyura (Pinnotheridae - Genre *Pinnotheres*), Decapoda Caridea (Palaemonidae - Genre *Pontonia*) et des mollusques Bivalvia dans les eaux européennes de l'Atlantique et de la Méditerranée.

ABSTRACT

Notes and illustrations concerning some associations observed between crustaceans Decapoda Brachyura (Pinnotheridae - Genus *Pinnotheres*), crustaceans Decapoda Caridea (Palaemonidae - Genus *Pontonia*) and molluscs Bivalvia in the European waters of the Atlantic and the Mediterranean Sea.

INTRODUCTION

Les Pinnotheridae européens sont de petits crustacés décapodes (Brachyura = crabes) au dimorphisme sexuel important (la femelle étant nettement plus grande que le mâle) et à la carapace faiblement calcifiée. On les retrouve occasionnellement dans le pharynx branchial des ascidies (*Pinnotheres ascidicola* Hesse, 1872 en Atlantique et *Pinnotheres marioni* Gourret, 1887 en Méditerranée) et dans la cavité palléale de certains bivalves [(*Pinnotheres pisum* (Linnaeus, 1758) - *Pinnotheres pectunculi* Hesse, 1872 - *Nepinnotheres pinnotheres* (Linnaeus, 1758)]. A cause de leur forme, petite et arrondie, les anglo-saxons les appellent « Pea-crabs », dénomination vernaculaire traduite en français par « crabes petits-pois ».

Cette association entre crabe et bivalve, dont il est régulièrement fait mention dans les eaux européennes, est généralement qualifiée de commensalisme. Certains auteurs pensent que ces petits crabes ne causent probablement pas de dommages physiques à leur hôte, détournant à leur profit une partie de la nourriture ingérée (Turquier et al, 1998). D'autres mentionnent qu'ils se nourrissent des excreta et du mucus de leur hôte (Bauchau, 1966 - Colin, 1967 - Pearse et al, 1987). Certains auteurs (O'Beirn & Walker, 1999) plaident cependant pour une association moins innocente et qualifient la cohabitation de parasitisme en se fondant sur l'observation d'un effet négatif exercé par *Pinnotheres ostreum* Say, 1817 (une espèce de l'Atlantique nord-occidental) sur les gonades de son hôte *Crassostrea virginica* (Gmelin, 1791).

Parmi les espèces européennes de crabes associés aux bivalves, *Pinnotheres pisum* et *Nepinnotheres pinnotheres* sont celles le plus souvent mentionnées dans la littérature de vulgarisation. Ce sont aussi les deux espèces pour lesquelles des caractères distinctifs et de l'iconographie sont proposés (Bauchau, 1966 – Ingle, 1983). Comparé à *N. pinnotheres* (taille de la carapace : M +/- 7,0 mm - F +/- 16,0 mm - coloration brune), *P. pisum* est relativement plus petit (taille de la carapace : M +/- 5,5 mm - F +/- 11,0 mm). La couleur de la carapace est jaune pâle avec les gonades rouges visibles par transparence. Le front du mâle est régulièrement arrondi alors qu'il est clairement échancré chez *N. pinnotheres*. Les deux espèces sont mentionnées tant en Méditerranée que le long de la façade atlantique européenne. La validité des espèces de Pinnotheridae est parfois sujet à débat (d'Udekem d'Acoz, 1999). Une troisième espèce, *Pinnotheres pectunculi*, répertoriée dans la Manche occidentale en association avec *Glycymeris glycymeris* (Linnaeus, 1758), est considérée comme valide (d'Udekem d'Acoz, 1999), ou parfois placée en synonymie avec *P. pisum*.

Une liste très importante de synonymes et de citations, avec mentions de la distribution et des hôtes préférentiels pour l'ensemble des membres de la famille des Pinnotheridae a été publiée par Schmitt et al (1973). Vu la difficulté d'objectiver le bien fondé des déterminations de Pinnotheridae, souvent anciennes (confusion d'espèces, synonymie), il est difficile d'attribuer avec certitude une gamme d'hôtes à une espèce en particulier. Même si cet éventail d'hôtes reste incertain, il semble qu'il soit relativement large pour *P. pisum* [plus d'une vingtaine d'espèces différentes de bivalves mentionnées dans Schmitt et al (1973)]. *N. pinnotheres* est, quant à lui, essentiellement (mais pas exclusivement) signalé dans des bivalves du genre *Pinna* ou *Atrina* (Pinnidae) (d'Udekem d'Acoz, 1999).

En Europe, au sein de la classe des crustacés, les Pinnotheridae n'ont pas l'exclusivité d'association avec les bivalves. Un autre décapode (Caridea = crevettes) de la Famille des Palaemonidae : *Pontonia pinnophylax* (Otto, 1821) est retrouvé, comme son nom l'indique, dans la cavité palléale des bivalves du genre *Pinna* en Méditerranée (Falciai et Minervini, 1996). Ce crustacé qui ressemble à un homard en réduction est en fait une petite crevette de couleur rose pâle (longueur : +/- 30 - 40 mm) dotée de deux fortes pinces asymétriques (deuxième paire de pattes). Mâle et femelle, d'un caractère assez belliqueux, vivent en couple dans des *Pinna nobilis* Linnaeus, 1758, dont ils interdisent l'accès à tout autre représentant de leur espèce (Harmelin et al, 1987).

Les bivalves ne sont pas la seule cible visée par des crustacés parasites ou commensaux (c'est selon) désireux de se réserver un territoire exclusif dans un hôte de choix. Comme déjà mentionné plus haut, des représentants de la famille des Pinnotheridae élisent aussi domicile dans la cavité respiratoire des ascidies, imités en cela par certaines crevettes du genre *Alpheus*. D'autres crevettes, comme *Typton spongicola* O.G. Costa, 1844 en Méditerranée, se réservent quant à elles les cavités présentes dans des éponges.

OBSERVATIONS PERSONNELLES

Des observations personnelles, agrémentées d'une iconographie viennent confirmer les données écologiques énoncées ci-dessus.

Hôte	Localité	Sexe	Fig.
Pinnotheres pisum **(Linnaeus, 1767)**			
Anomia ephippium Linnaeus, 1758	Rota - (E) Costa de la Luz	F	Fig. 2.
Anomia ephippium Linnaeus, 1758	Banyuls / Mer - (F) Golfe du Lion	F	-
Modiolus modiolus (Linnaeus, 1758)	Loch Ailort - (GB) Nord-Ouest Ecosse	F + M	Fig. 1. - Fig. 3.
Mytilus edulis Linnaeus, 1758	Zélande - (NL)	F	-
Pinna nobilis Linnaeus, 1758	Aphrodite Bath (Chypre)	F + M	Fig. 4.
Nepinnotheres pinnotheres **(Linnaeus, 1758)**			
Atrina pectinata (Linnaeus, 1767)	Estepona - (E) Costa del Sol	F + M	Fig. 5.
Atrina pectinata (Linnaeus, 1767)	Rosas - (E) Costa Brava	F	Fig. 6. - Fig. 7.
Pontonia pinnophylax **(Otto, 1821)**			
Pinna nobilis Linnaeus, 1758	Liman Kalesi - (TR) Golfe de Taşucu	F + M	Fig. 8.

CONCLUSION

Les hôtes répertoriés sur base du matériel récolté sont classiques, à l'exception peut-être de *Anomia ephippium* dont il n'est fait mention qu'une fois dans une référence datant du début du siècle précédent. (de Miranda y Rivera, 1921).

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Notes

La nomenclature relative aux bivalves est reprise de CLEMAM, « Check List of European Marine Mollusca » http://www.mnhn.fr/base/malaco/html - celle relative aux crustacés est reprise de « European Register of Marine Species » http://www.erms.biol.soton.ac.uk

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LEGENDES

Fig. 1. ***Pinnotheres pisum* (Linnaeus, 1758)** F + M **dans *Modiolus modiolus* (Linnaeus, 1758)** - Loch Ailort (GB) - Diamètre de la carapace F : 11 mm - M : 6 mm.

Fig. 2. ***Pinnotheres pisum* (Linnaeus,1767)** F **dans *Anomia ephippium* Linnaeus, 1758** - Rota (E) - Diamètre de la carapace : 12 mm.

Fig. 3. ***Pinnotheres pisum* (Linnaeus, 1767)** F **dans *Modiolus modiolus* (Linnaeus, 1758)** - Loch Ailort (GB) - Diamètre de la carapace 11 mm.

Fig. 4. ***Pinnotheres pisum* (Linnaeus, 1767)** M **dans *Pinna nobilis* Linnaeus, 1758** - Aphrodite Bath (CY) - Diamètre de la carapace : 5,6 mm.

Fig. 5. *Nepinnotheres pinnotheres* **(Linnaeus, 1758)** F + M **dans** *Atrina pectinata* **(Linnaeus, 1767)** - Estepona (E) - Diamètre de la carapace F : 13,4 mm - M : 8,7 mm.

Fig. 6. *Nepinnotheres pinnotheres* **(Linnaeus, 1758)** F **dans** *Atrina pectinata* **(Linnaeus, 1767)** - Rosas (E) - Diamètre de la carapace : 14 mm.

Fig. 7. *Nepinnotheres pinnotheres* **(Linnaeus, 1758)** F **dans** *Atrina pectinata* **(Linnaeus, 1767)** - Rosas (E) - Diamètre de la carapace : 14 mm.

Fig. 8. ***Pontonia pinnophylax* (Otto, 1821)** F + M **dans *Pinna nobilis* Linnaeus, 1758** - Liman Kalesi (TR) Longueur F : 35 mm - M : 28 mm.

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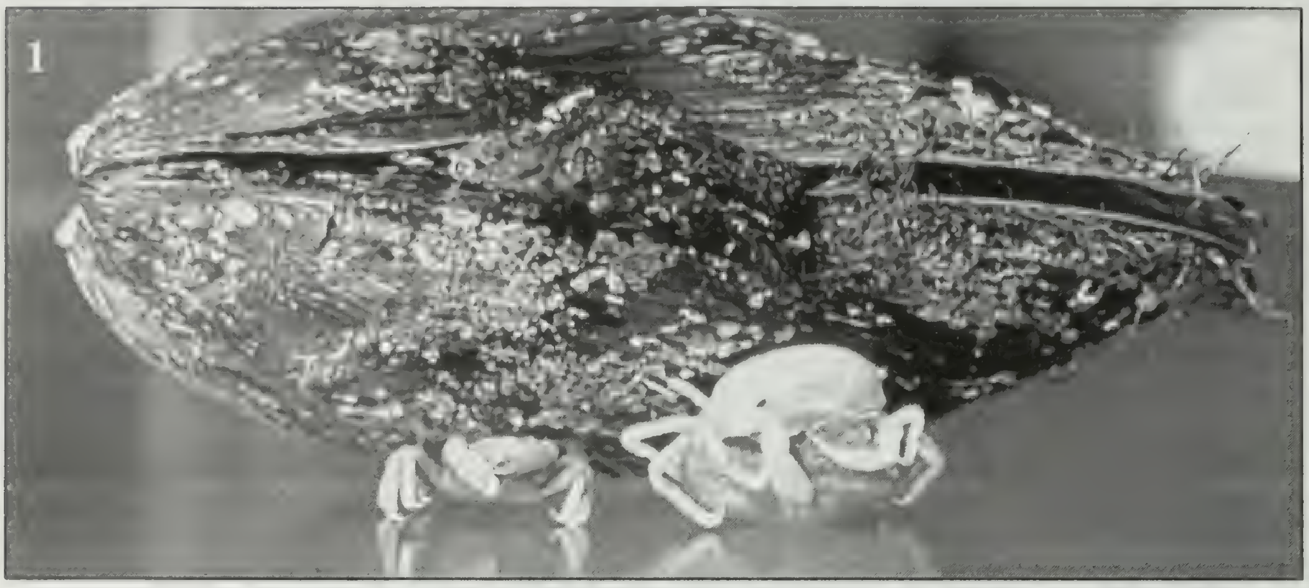

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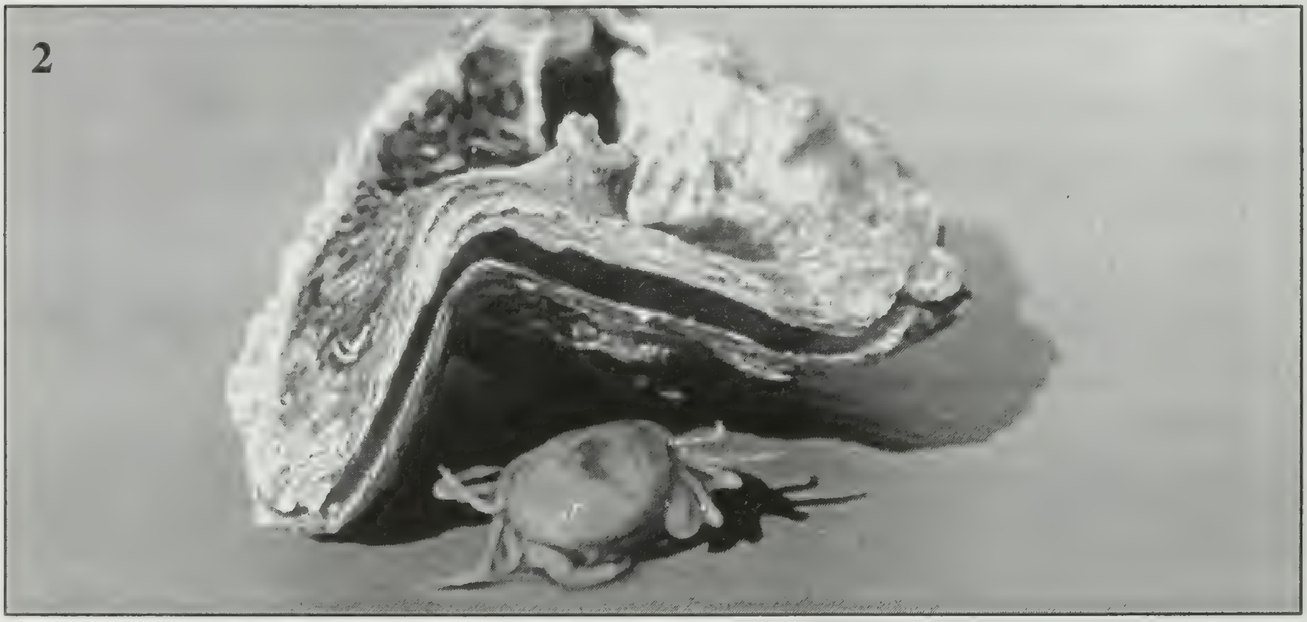

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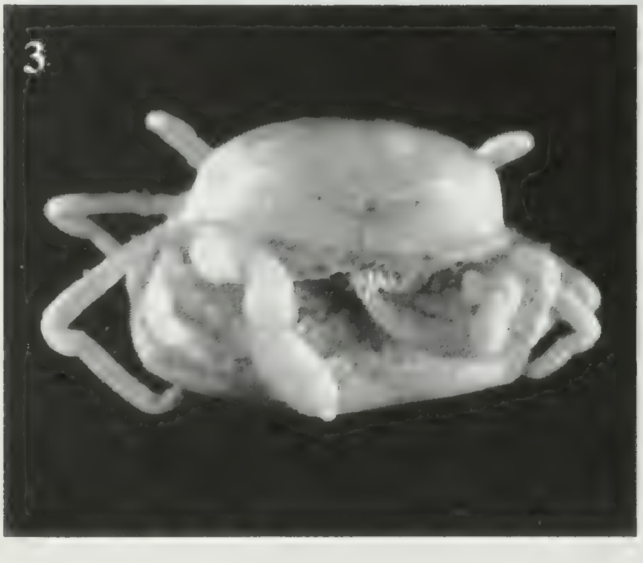

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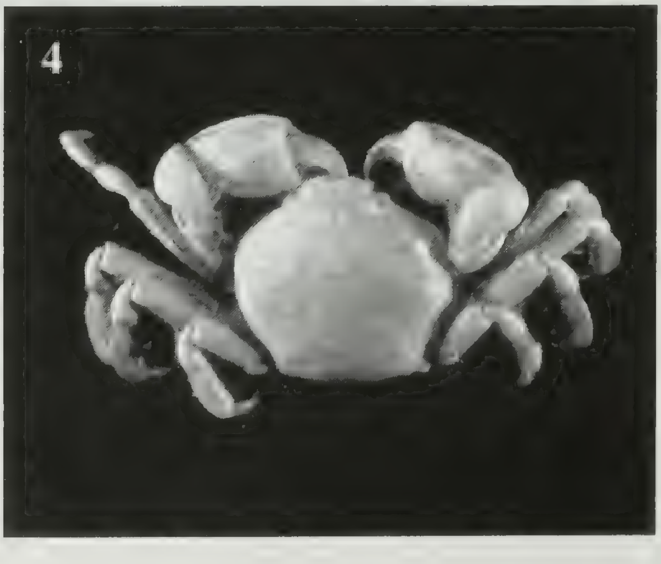

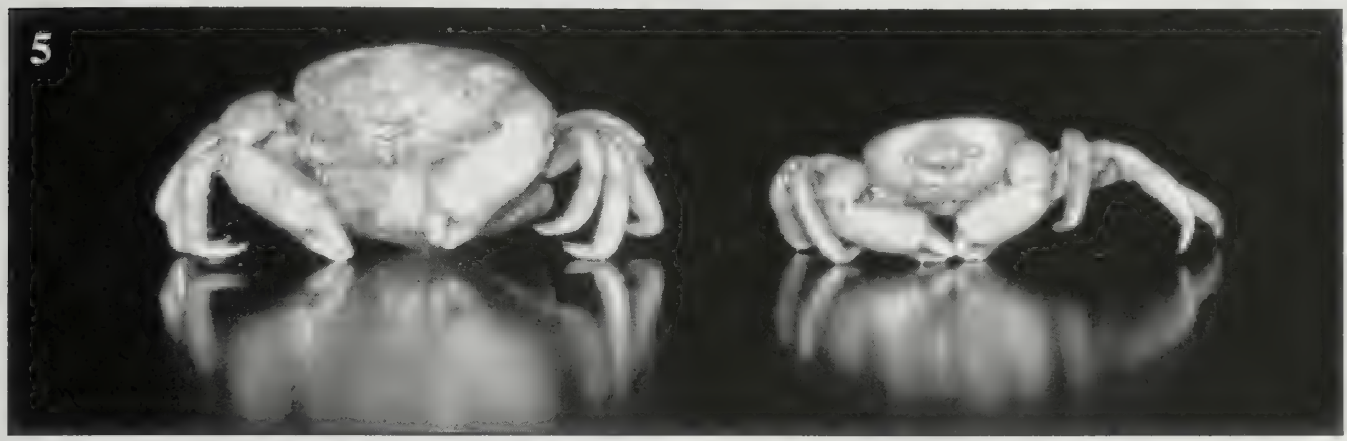
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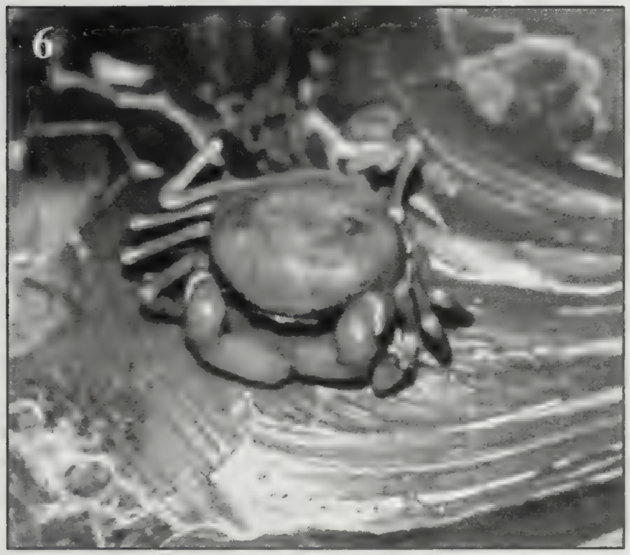
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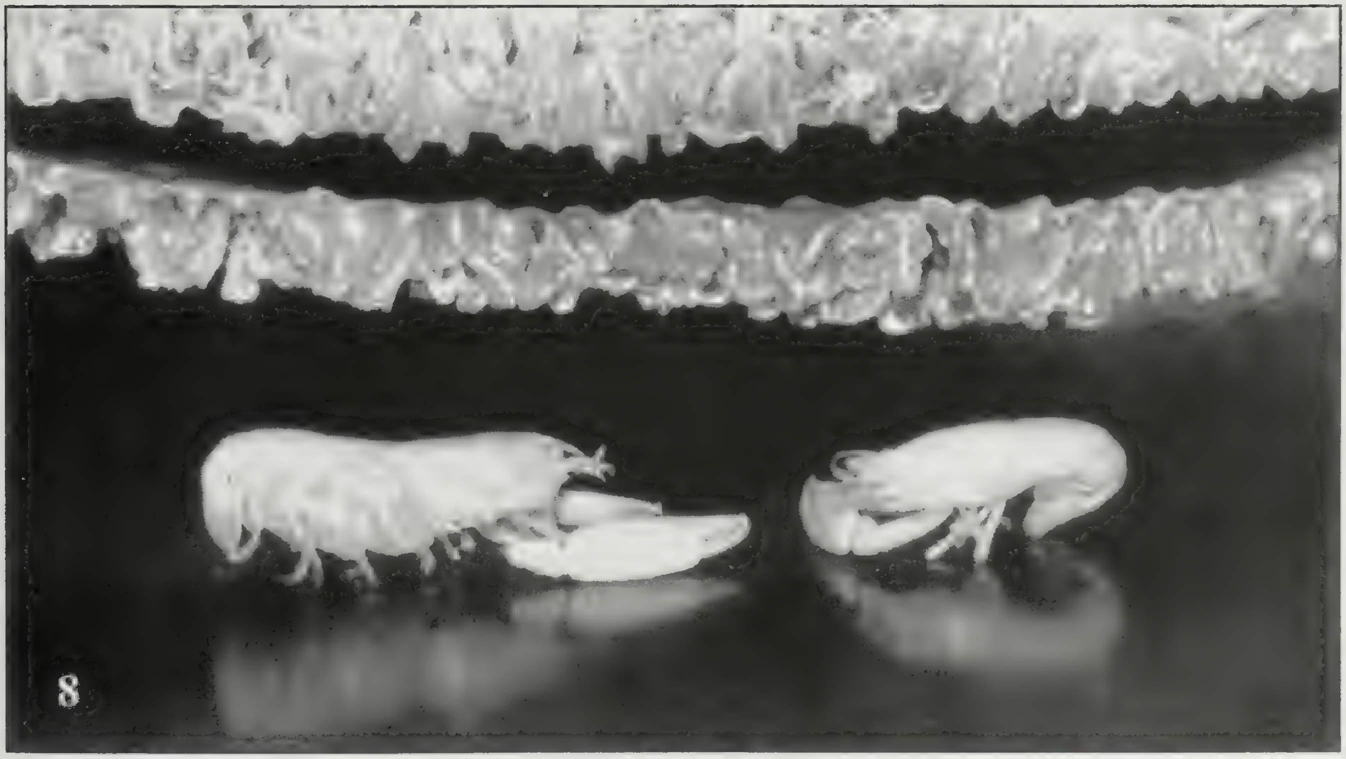
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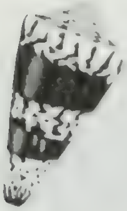


Madagascar II

Rita et Jacques SENDERS

(réunion du 20 avril 2002)

MADAGASCAR ne se laisse pas découvrir en quelques jours mais exige plusieurs séjours. Son étendue (superficie de la France plus celle du Bénélux), sa diversité, les difficultés d'accès de certaines destinations nécessitent temps et patience.

Pour nous, un itinéraire est une sélection de sites à sensations fortes, de surprises étonnantes, d'émotions profondes, tant à la découverte de superbes paysages qu'au contact d'un peuple qui profite de chaque instant de la vie.

Les longs trajets, les pistes chaotiques, les marches nocturnes dans la forêt sont parfois éprouvantes, mais chacun de nous veut mériter ce qu'il attend.

La superbe végétation est, hélas, menacée comme dans beaucoup d'autres pays. Des forêts qui recouvraient la majeure partie de l'île, il ne reste, de nos jours que 20 %. Les feux de brousse, la culture sur brûlis stérilisent la terre. L'érosion et les pluies entraînent les éléments minéraux du sol qui devient impropre aux cultures et laisse apparaître la latérite sous-jacente.

Des programmes de protection et de valorisation des ressources naturelles sont mis en œuvre. Espérons qu'ils porteront leurs fruits.

De 80 à 90 % de la faune et la flore de Plie sont endémiques. Lorsque Madagascar s'est séparée de l'Afrique, il y a 120 millions d'années, les lémuriens ont pu y subsister en l'absence de prédateurs. Voir gambader ou se dorer au soleil les *lemurs catta* ou *makis* est un spectacle inoubliable. Les *varis*, au pelage blanc et noir, prennent des attitudes tellement décontractées qu'aucun photographe n'y résiste. N'oublions pas les *sifakas*, véritables danseurs étoiles et les grands *indris* ou *babakoto*, qui sont plus difficiles à approcher mais que l'on repère par leurs cris matinaux.

Les caméléons sont peut être moins attirants, mais ces champions du mimétisme aux couleurs superbes étonnent autant par leurs mouvements saccadés que par leurs yeux se mouvant indépendamment en tous sens ainsi que par la rapidité de la projection de leur langue visqueuse.

La flore n'est pas en reste, partout fleurs, fruits et parfums prolongent l'enchantement. Signalons les étranges *népenthes* à la beauté fatale pour les insectes, les *didierea* ou abres-pieuvres enroulant leurs tentacules et les *ravenala madagascariensis* ou arbres du voyageur (emblème de Plie) dont les branches conduisent vers l'intérieur l'eau recueillie par leurs feuilles.

Enfin les majestueux baobabs ("arbres de mille ans") dont les ombres immenses s'allongent au crépuscule.

Toutes ces merveilles, et combien d'autres, vous attendent et ne demandent qu'à se laisser surprendre et vous séduire !

Et, enfin, quelques coquillages !

Nous vous présentons, choisis parmi d'autres les coquillages qui vont suivre. Ils ont été photographiés principalement à lfaty, à une heure de voiture de Tuléar: la plage de sable coralien est encore protégée par un long banc de corail mort, large de 1 à 3 m. Ces deux milieux différents nous ont permis de récolté un beau choix de petites espèces: nérites, natices, patelles, petits cônes, donax, cyprées etc...

Voici les coquillages illustrés par les dias proposées :

- *Cypraea tigris*, cassée mais vue intérieur.
- Quelques *Cyprées annulus*, bien vivantes,
- Seiche, échouée, à remettre à l'eau.
- *Bulla ampula,* trouvées vivants pour la première fois malgré nos fréquents voyages...
- Donax, probablement *Donax faba*.
- *Cantharidus suarezensis* (Trochidae). Dans de fines algues (barbe à papa!) avec:
  Phasianella variegata, bien vivantes, avec opercules.

Chez divers petits marchands, près de notre hôtel, ou à lfaty même, nous avons pu obtenir:

Harpa cabriti x major: très foncée avec un apex exceptionnel de qualité.
Conus betulinus commun, mais ici un spécimen exceptionnels par son dessin et couleurs.
Conus episcopatus.
Plusieurs *Conus verriculum*, cône classique de Madagascar, mais ici encore avec un dessin exceptionnel.

et enfin:
- *Conus vezoi*, d'un beau brun chocolat ainsi que plusieurs rares exemplaires avec triangles blancs
- *Cypraea androyensis* dont un exemplaire trouvé vivant dans des algues échouées sur le sable..

Terrestres

- Dans le sable, près de notre bungalow: une belle série de T*ropidophora tricarinata* sélectionnés parmi un grand nombre de spécimens abîmés et décolorés par un long séjour au soleil.
- Un exemplaire de *Helicophanta socii*, grand et en assez bon état.
- *Obba rota* (camaenidae), un exemplaire impeccable. .
- *Tropidophora cuveriana*, très beau, et enfin, celui que je recherchais entre tous:
- *Tropidophora deburghiae*, pour moi, le plus beau terrestre malgache.

Pour finir: 'la cerise sur le gâteau': nous avions chez nous un oeuf d'aepyornis, cet oiseau gigantesque: haut de près de trois mètres, disparu il y seulement quelques siècles, probablement pour la récolte de ses oeufs, hauts de 30 cm et pesant 13 kgs. Les malgaches récoltent des morceaux qu'ils trouvent au bord de la plage, après une forte tempête. Ils les trient et reconstituent, après des jours de patience, un œuf qui peut être exporté sans trop de problèmes. Mais le grain et la couleur de ces fragments varient fort ... nous avons entendu qu'il y avait un exemplaire pratiquement parfait, qui serait peut être en vente: en effet il était magnifique ! Après une longue discussion et quelques coups de téléphones, nous avons obtenu les papiers nécessaires pour son expédition en Europe. Le problème de l'emballage n'était pas évident: nous devions prendre trois avions pour le retour, avec un grand œuf !!! ! Mais tout s'est bien terminé: le sac en fibres végétales, tressées et colorées, est arrivé à Bruxelles, avec son contenu ... intact ! Ceux qui viennent chez nous peuvent l'admirer à loisir.

Notre projection s'est achevée par deux portraits de fillettes dont la seconde prend la couleur du soleil qui se couche: rouge et orange flamboyant, comme chaque soir devant notre bungalow.

Petit lexique Malgache -> Francais -> Malgache.

La plupart des noms de lieux sont repassés en langue malgache: Exemples:

L'Ile de Ste Marie est redevenu Nosy Bohara. Nosy signifiant île.
Nosy Be est resté tel quel: be signifiant grand, beau ou gentil.
Tulear est redevenu Toliara, beaucoup de voyelles ne se prononçant pas en Malgache, ce changement est faible et l'on vous comprendra si vous dites Toliar.
Tananarive est Antananarivo. Même remarque.
Fort Dauphin redevient Taolanaro et Tamatave Taornasina.
Diego Suarez (portugais) est redevenu Antsiranana.

Et, pour le plaisir: caméléon est tanala et le grand lémurien Indri est babakoto.

Et nous vous recommandons le Guide "Gallimard", prodigieusement bien illustréfl!
Et bon voyage si vous allez dans "La grande Ile"
On y mange très bien et pour accompagner les huîtres de roche et le foie gras, ne vous privez pas de vin: il y en a de très honnêtes à Madagascar.

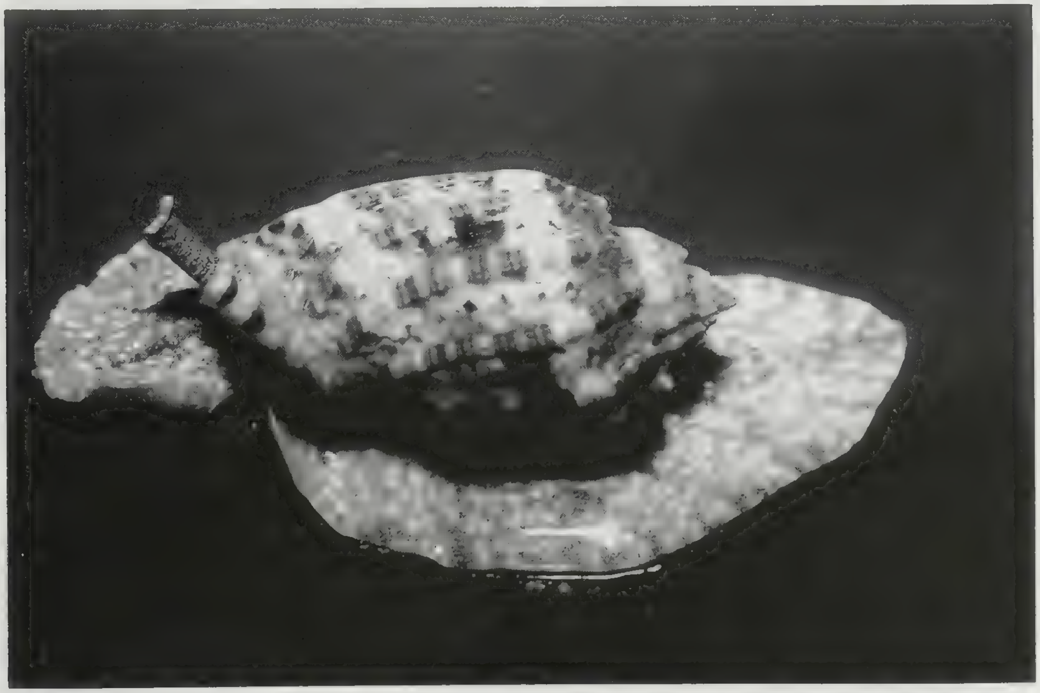
L'allée des baobabs à Morondava est le site le plus visité de tout Madagascar.

Les baobabs amoureux à Morondave.

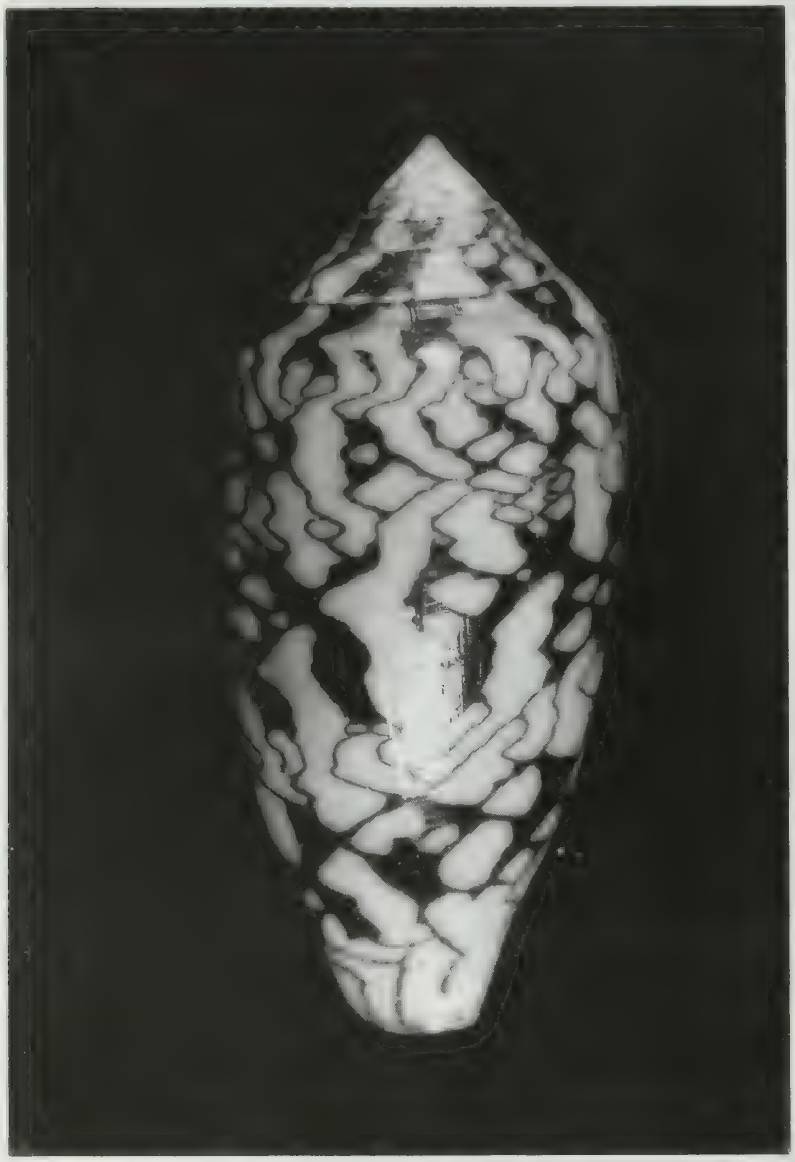
Lemurs Catta ou makis en pleine action.

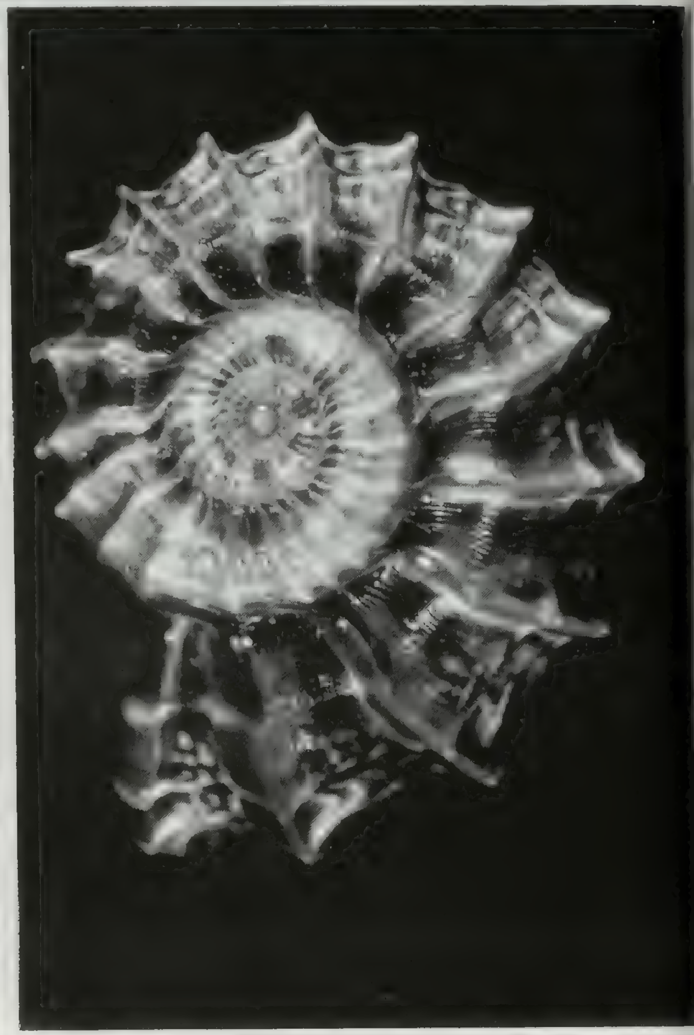
Le caméléon Furcifer verrucosus est arboricole; il vit sur la côte est de Madagascar.

Pirogue utilisée par les Vezos (gitans de la mer)



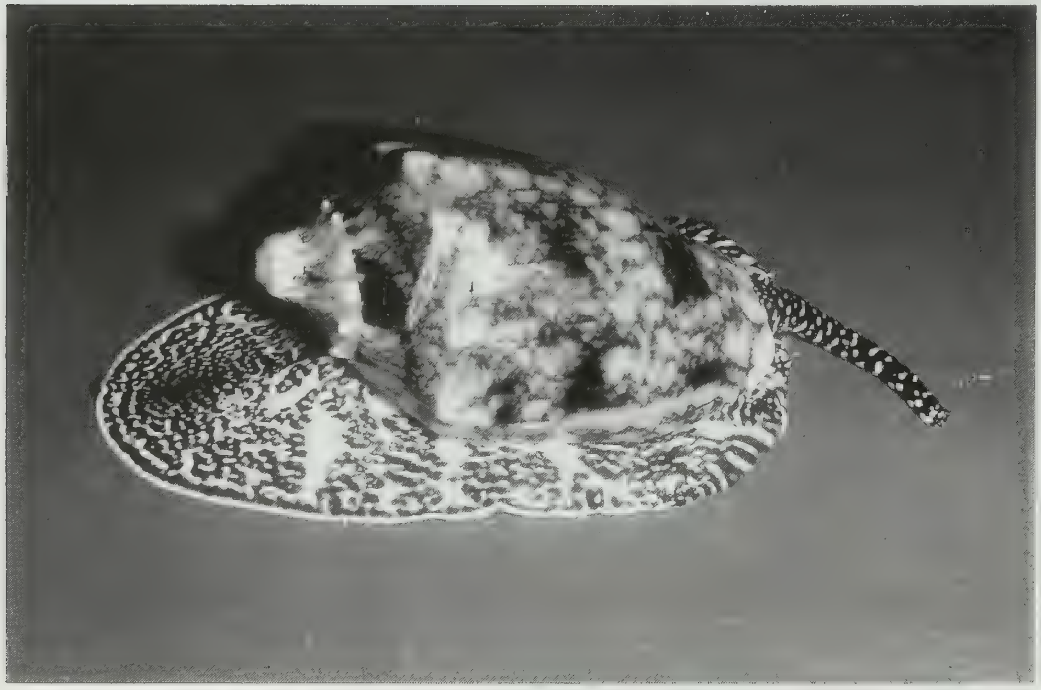
Harpa amouratia – Nosy Be, nord de Madagascar 11/1989



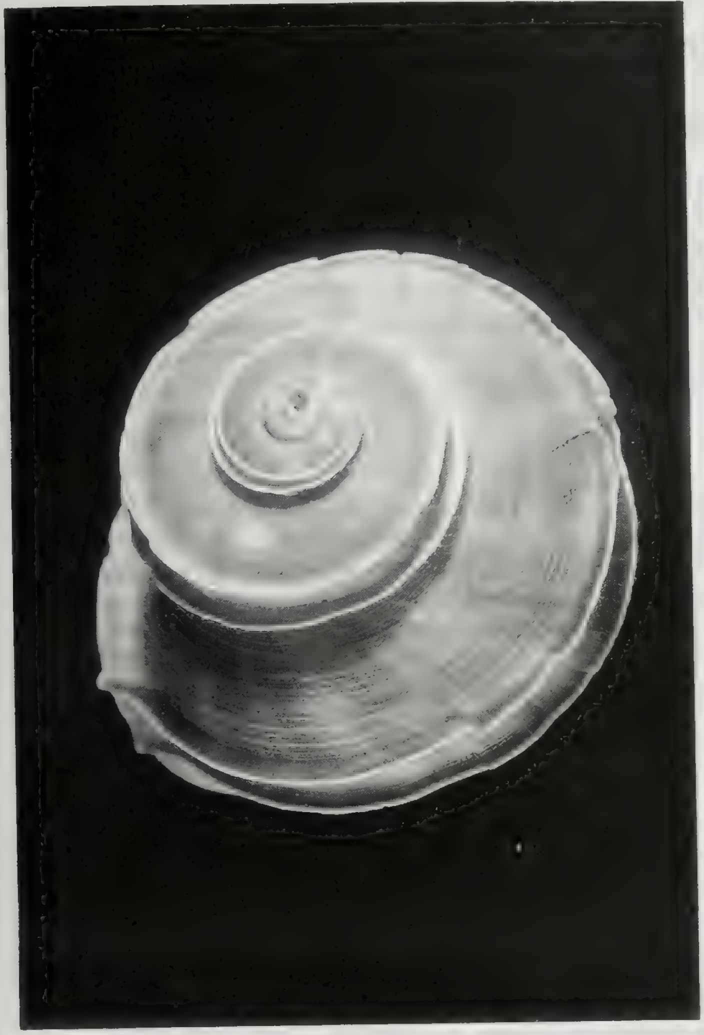


Harpa cabriti x major – Faty, N. Tulear, côte ouest de Madagascar 10/2001

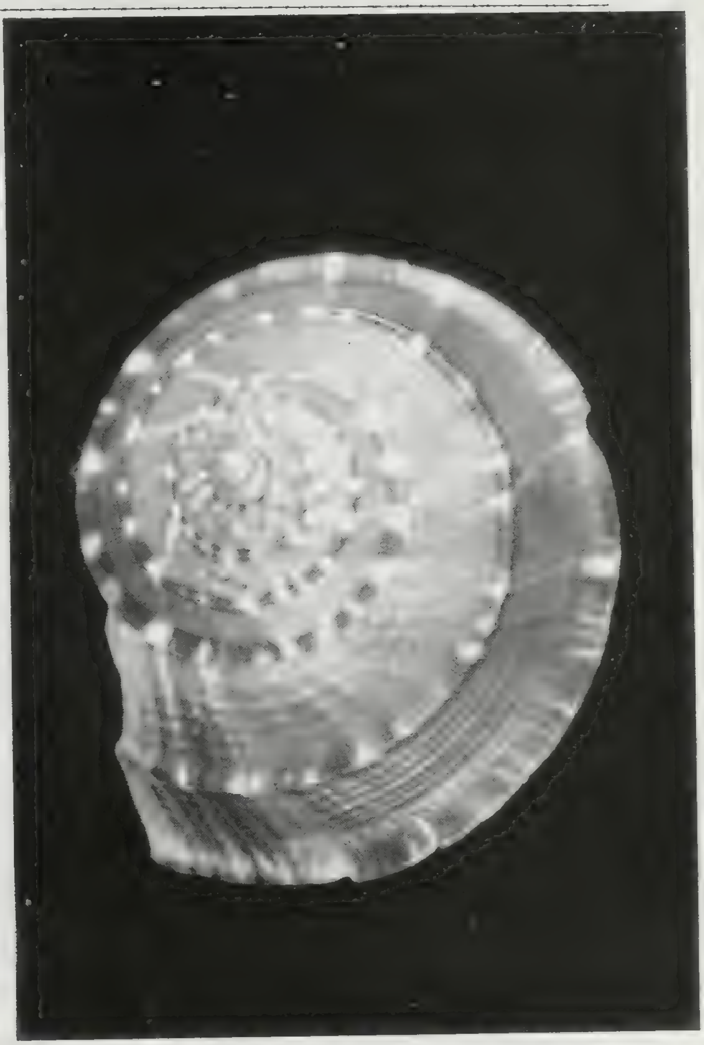
Conus textile verriculum Reeve, 1843 – Tulear, côte ouest de Madagascar



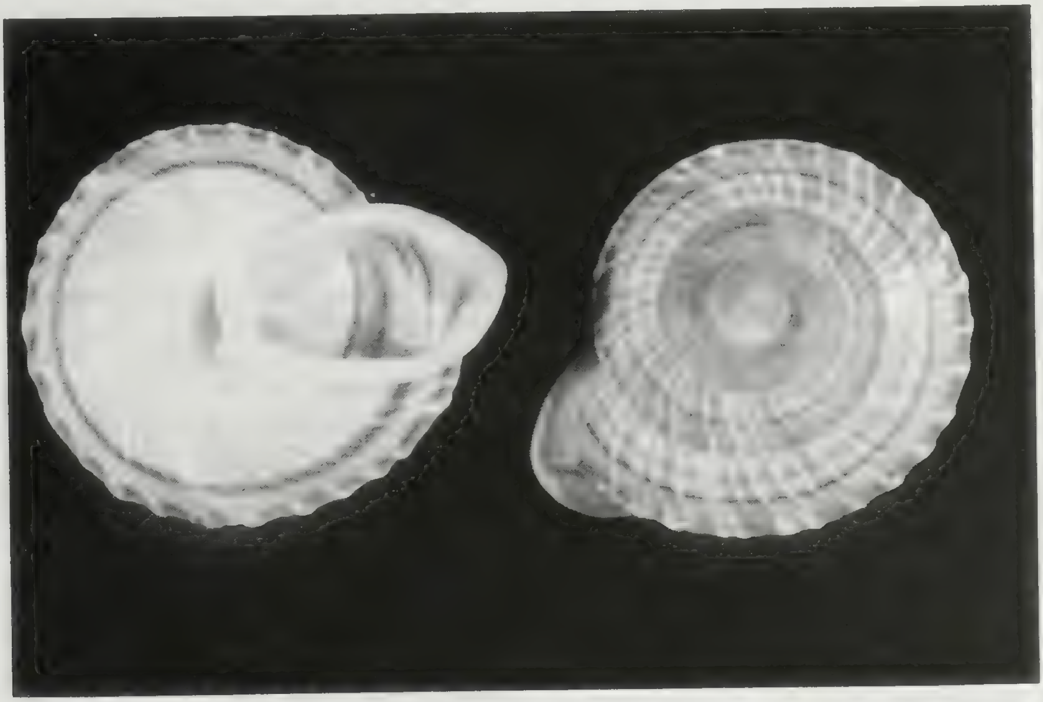
Voluta vespertilio – eau peu profonde, Faty, N. Tulear, sud-ouest de Madagascar 10/2001



Tropidophora vespertilio - Local collector 6/2001



Tropidophora deburghiae - Local collector 6/2001



Camaenidae : *Obba rota* – Local collector 6/2001

L'Assemblée Générale 2002 de la Société Belge de Malacologie

Marc ALEXANDRE, Roland HOUART, Annie LANGLEIT et Claude VILVENS

Comme tous les ans en janvier, la Société Belge de Malacologie a tenu son Assemblée Générale annuelle. Cette année a vu la remise de SOBEMAR à quelques membres de la Société. Ces prix ont été décernés pour certaines contributions et/ou manifestations de la Société. Quelques exemples:
- Meilleur article scientifique de Novapex
- Novapex/Société
- Le web
- Les conférences

Et d'autres…
Comme depuis 4 ans à présent, l'assemblée s'est terminée dans la bonne humeur et par un drink accompagné de petites choses à manger et d'excellentes croustades d'escargots (Gros Gris) préparé par notre ami Pierre Adrians.

1. Compte-rendu de l'Assemblée Générale de la Société Belge de Malacologie

Conformément aux statuts de la Société Belge de Malacologie ASBL, l'Assemblée Générale ordinaire s'est tenue le samedi 26 janvier 2002 en la salle située rue Félix Hap, 14 à 1040 Bruxelles. Suivant l'ordre du jour, lecture fut donnée du rapport moral, du rapport financier de l'exercice 2001, ainsi que des prévisions budgétaires pour l'exercice 2002.
Les cotisations pour 2003 connaîtront une légère hausse due à l'inflation des prix d'impression et aux frais élevés qu'entraînent l'envoi de nos publications. Les montants suivants ont été approuvés à l'unanimité:

COTISATION/ABONNEMENT 2003	Belgique	AUTRES REGIONS
Membre effectif	35 €	50 €
Membre étudiant	20 €	
Famille (sans le service du bulletin)	15 €	

ELECTION et REELECTIONS

Trois administrateurs sont arrivés au terme de leur mandat et sont rééligibles.
Nous avons également reçu la nouvelle candidature de M. Marc Alexandre.
Madame Langleit ainsi que Messieurs Houart et Waiengnier ont été réélus, tandis que M. Alexandre a été élu comme nouveau membre du conseil d'administration.

En fin de séance le nouveau conseil s'est réuni pour élire en son sein président, vice-présidents, secrétaire, trésorière et bibliothécaire.

Marc ALEXANDRE
Secrétaire

Roland HOUART
Président

2. Rapport Moral

Nous nous sommes rencontrés 12 fois au cours de l'année 2001 pour ensemble écouter des relations de voyages, des commentaires sur la taxonomie ou sur d'autres sujets divers. Nous avons ainsi assisté à:
- L'exposition de la Société Belge de Malacologie qui tous les ans rassemble beaucoup de monde.
- L'Assemblé Générale qui nous donne l'occasion de voir ce qui a été réalisé et ce qui peut l'être mieux. C'est aussi l'occasion de prendre un drink ensemble, de déguster les excellentes croustades d'escargots (à l'ail ou au fromage) et de discuter de sujets qui nous tiennent tant à cœur.
- La reprise de contact en septembre avec le traditionnel banquet et des discussions générales sur notre site web, plus particulièrement notre dictionnaire de malacologie et les malacologues célèbres.

En dehors de cela nous avons aussi pu nous rassembler pour écouter:

- R. Houart: La famille des Muricidae (suite)
- E. Meuleman: La famille des Strombidae
- R. Scaillet: l'Irlande
- C. Vilvens: la Famille des Trochidae (suite)

- E. Waiengnier: Les Helicostilidae
- E. Meuleman: La coquille St. Jacques
- M. Verhaeghe: La Guadeloupe
- J. & R. Masson: Quelques récoltes de par le monde
- R. Duchamps: Etude historique des nautiles

N'oublions pas qu'en février nous nous sommes tous retrouvés à Oupeye pour la bourse de coquillages. Malheureusement, notre emplacement quelque peu décentré par rapport aux festivités ne nous a pas permis de réitérer le succès de notre précédente bourse de 1999. A part cela nous nous sommes quand même bien amusés, ce qui somme toute est un résultat déjà très appréciable.
N'oublions pas notre banquet annuel qui s'est déroulé après notre reprise de contact, le 8 septembre 2001, et nos deux excursions des 2 juin et 22 septembre, respectivement à Hamois (avec son *Succinea* aux antennes vertes) et à Fosses-la-Ville.

NOVAPEX
2001 fut une année faste: nous avons publiés 4 numéros de NOVAPEX les 20 mars, 20 juin, 20 septembre et 20 décembre 2001. NOVAPEX (articles originaux) a totalisé 27 articles contenant des articles et de nouvelles descriptions de: Marginellidae, Trochidae, Mitridae, Nassariidae, Muricidae, Costellariidae, Buccinidae, Punctidae, Charopidae, Epitoniidae, Volutidae, Olividae, Pleurotomariidae, Elachinidae, Rissoellidae, Skeneidae, Fasciolariidae , Turbinidae et Turbinellidae, le tout sur 178 pages (contre 107 en 2000). Un total de **39** nouvelles espèces furent décrites. D'autres articles nous ont donné un aperçu de la faune marine dans l'Isfjorden ou la confirmation de la présence d'un Trochidae en Bretagne. D'autres encore nous ont suggéré la terminologie et la méthodologie à appliquer pour la description de Muricidae ou nous ont permis de découvrir une synonymie chez les Olividae.
Ont participé à NOVAPEX en 2001: F. Boyer, C. Delongueville, R. Scaillet, E. Guillot de Suduiraut, E.F. García, B. Dharma, T.C. Lan, H. Turner, M.P. Marrow, E. Rolán, D. Merle, K. Fraussen, R. Hadorn, A.C. van Bruggen, J.L. Van Goethem, G.T. Poppe, J. Condé, C.B. Boyko, J.R. Cordeiro, P. Anseeuw, F. Rubio, P. Bail, D. Shelton, W. Engl, M.G. Harasewych et last but not least, vos serviteurs C. Vilvens et R. Houart.

NOVAPEX-SOCIETE a connu un petit bouleversement en 2001, auparavant agrafé au centre de NOVAPEX il y est maintenant simplement inséré. Nous pensons que cette présentation est plus agréable, le rendant également plus facile à compulser. Sur un total de 177 pages (contre 129 en 2000) il nous a proposé divers articles tels des relations de voyage, des relations d'excursion, la rubrique "visite chez un collectionneur" quelques "morceaux choisis" et les rubriques habituelles mais tellement importantes: "quelques nouvelles publications" et "nous avons reçus", et bien sûr l'agenda de nos activités. Ont participé pour Novapex-Société en 2000: J. & R. Senders, A. Langleit, J. Masson, C. Delongueville, R. Scaillet, E. Waiengnier, M. Alexandre, E. Meuleman, M.H. Girona, et toujours vos serviteurs, C. Vilvens et R. Houart.

NOTRE SITE WEB
Notre site (http://www.sbm.be.tf) est régulièrement mis à jour et remplit son double rôle
- informatif : présentation de la SBM, agenda des réunions, annonce des excursions, aspects divers de la vie de la société, dates des grandes marées;
- didactique : le dictionnaire de malacologie en français et les bibliographies de malacologues célèbres continuent à croître et à embellir, grâce au dynamisme de nos membres; une présentation des mollusques a été ajoutée cette année.
D'autres idées sont en préparation car, c'est bien connu, un site Web qui n'évolue pas meurt quelque peu.

...ET POUR CONCLURE
Merci à tous! Merci pour votre fidélité, pour votre collaboration et pour votre présence. Sans vous nous n'existerions pas.

Roland HOUART
Président

Claude VILVENS
Vice-président

3. Bilan et prévisions

Bilan de l'exercice 2001

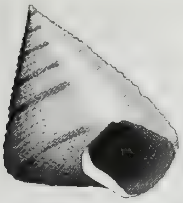
Solde créditeur au 1er janvier 2001	8856,05	
Cotisations	4245,72	
Vente publications	475,93	
Tirés-à-part	853,62	
Remboursement planches couleur	1090,73	
Dons anonymes	805,48	
Intérêts fond de roulement	100,74	
Publicité	223,11	
Subsides Région Wallone	1239,47	
Frais de publication		8376,40
Frais d'expédition		1590,81
Location salle		104,11
Location boîte postale		62,47
Abonnement aux revues		143,48
Divers		361,13
Totaux	17890,85	10638,40
Solde créditeur au 31 décembre 2001		7252,45
Total général		17890,85

Prévisions budgétaires
Pour 2002

Solde créditeur au 1er janvier 2002	7252,45	
Cotisations	5200	
Frais de publication		8300
Frais d'expédition		1600
Location salle		105
Abonnement aux revues		150
Divers		250
Totaux	12452,45	10405
Solde créditeur au 31 décembre 2002		2047,45
Total général		12452,45

La trésorière, Le vérificateur, Le président,

G. Langleit.



Des mollusques dans les bandes dessinées

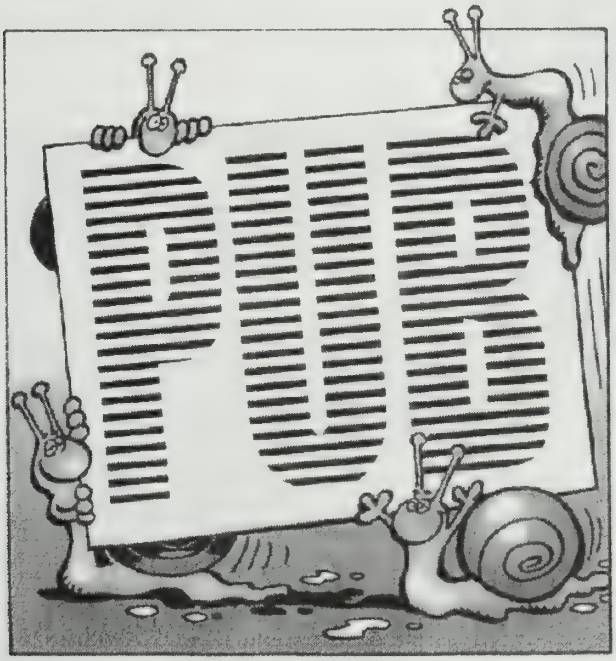
Claude VILVENS

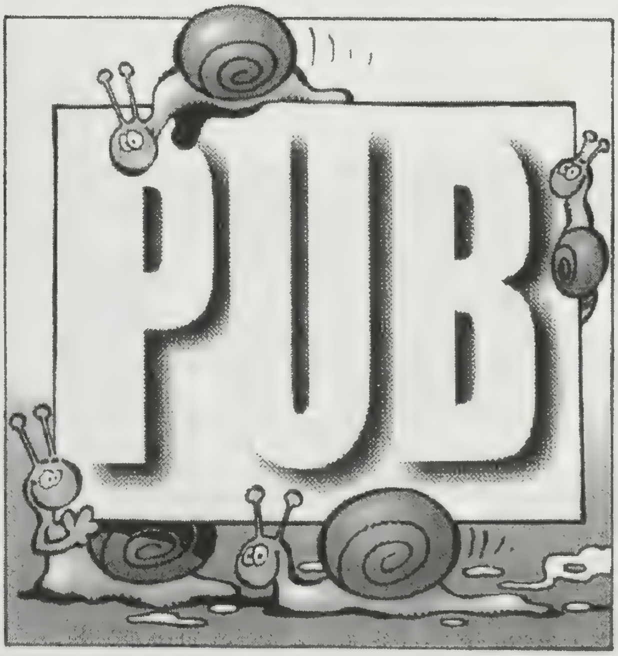
Je n'ai pas honte à le dire : j'adore les bandes dessinées. Ben oui, j'avoue : j'achète Spirou chaque semaine et je le lis avec délices – c'est toujours mieux que les gens qui laissent traîner un livre de Kant ou de Proust sur leur table de salon sans l'avoir jamais ouvert ;-) ....

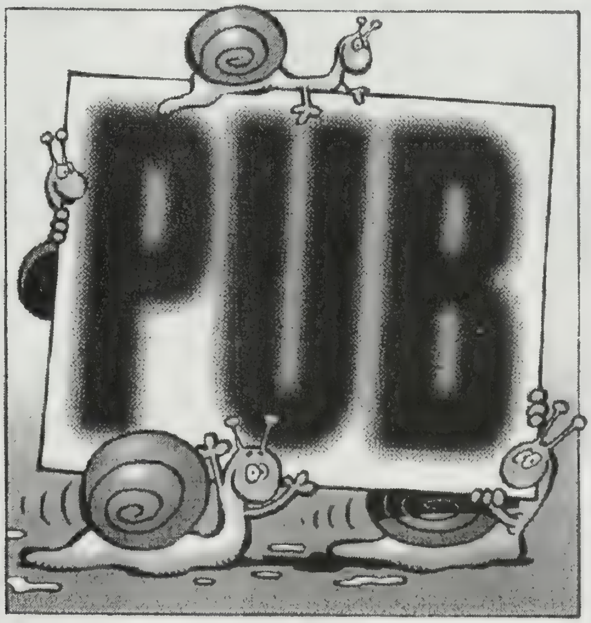
Donc, dans ces bandes dessinées, il arrive que l'on voie apparaître l'un ou l'autre mollusque. En voici deux exemples.

1) Les Zappeurs, ce sont Raymond, Isabelle, Juju et Nina – la famille la plus accro de la télévision de ce côté-ci du Rhin. Voici quelques exemple de panneaux publicitaires …

Les zappeurs
N° 9 : La télé rend flou !
Ernst – Janssens
Ed. Dupuis

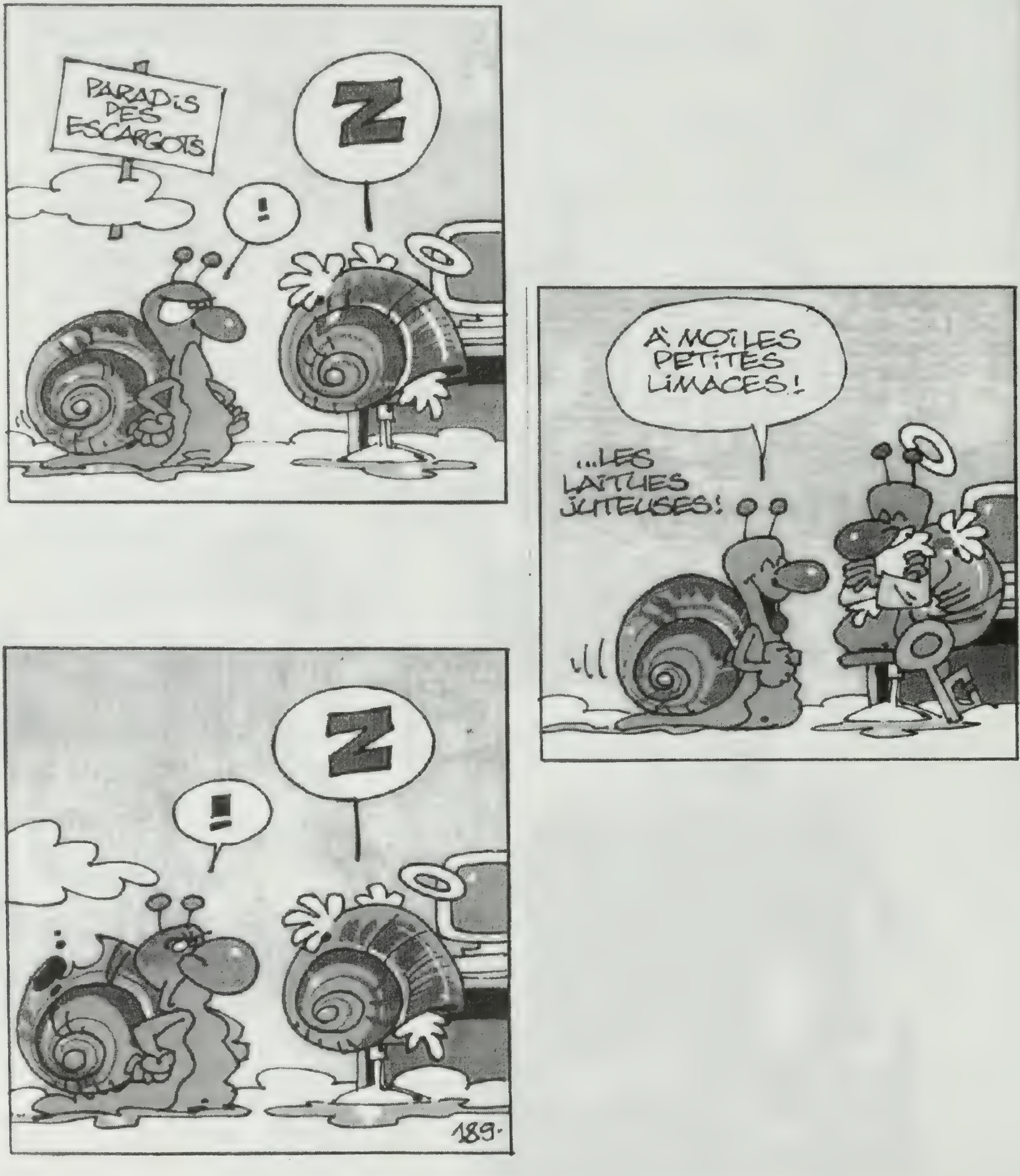


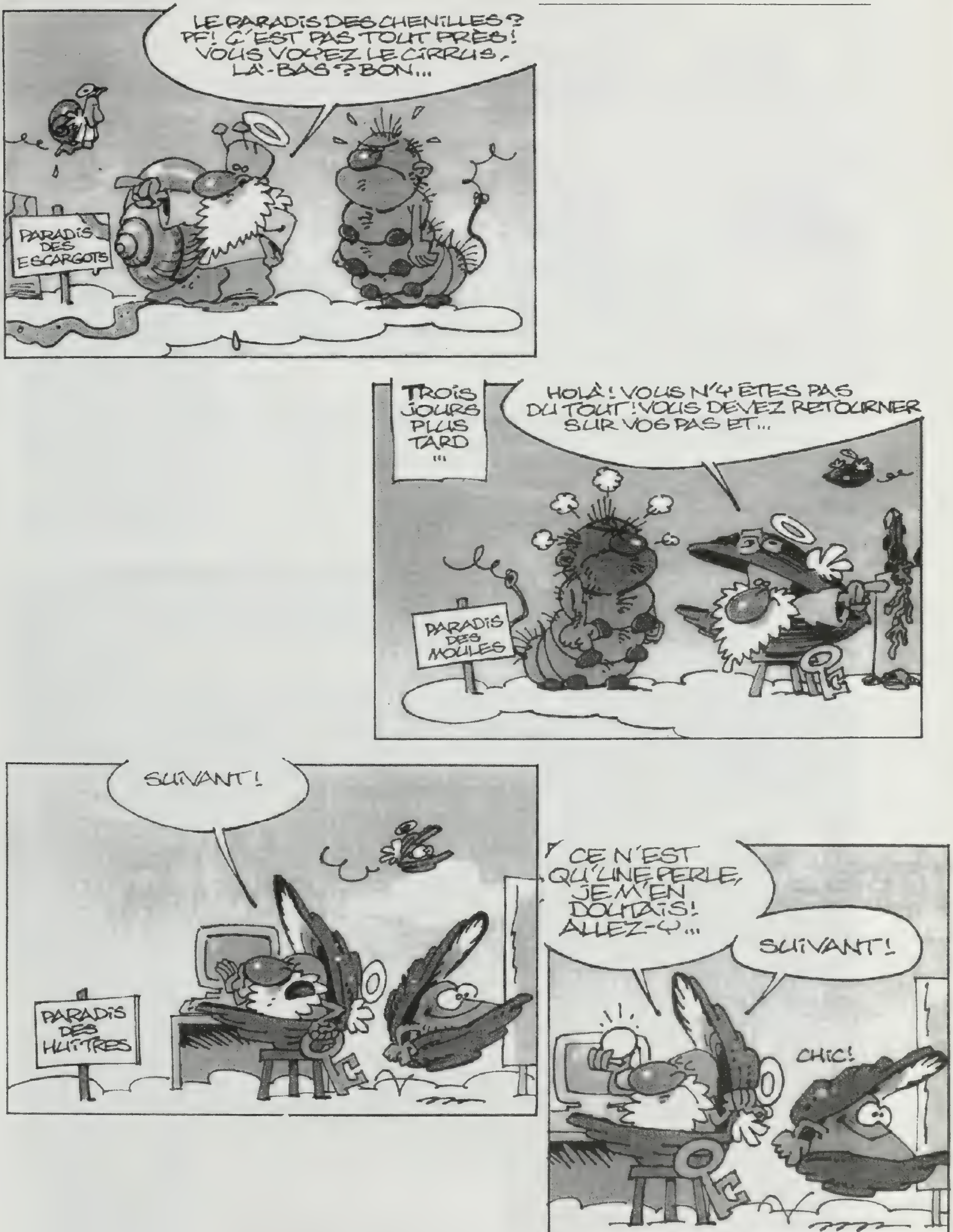


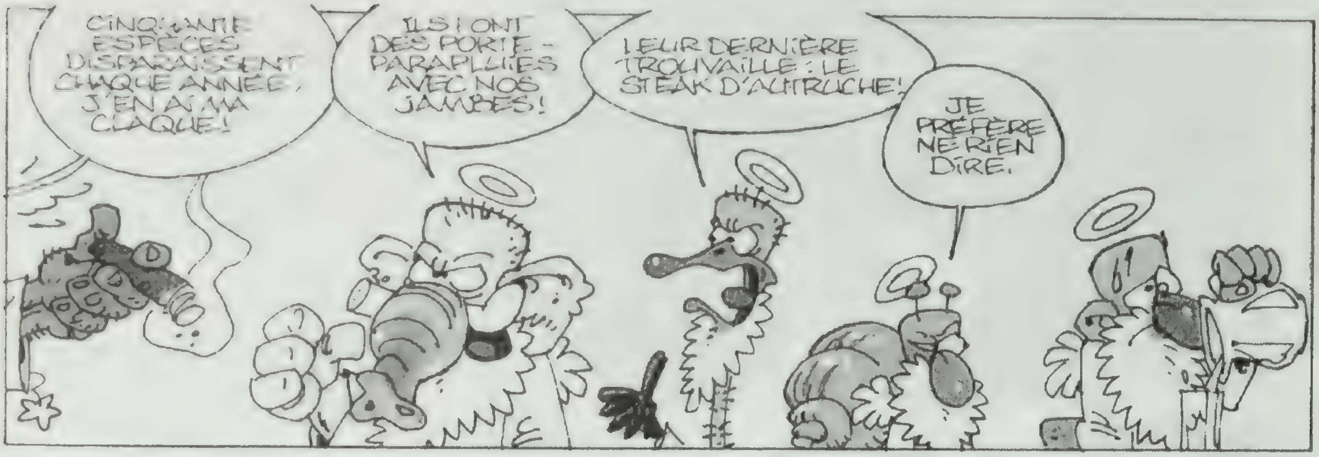


2) Passe-moi le ciel, c'est la narration terre à terre (si je puis dire) des tribulations de Saint Pierre (un par espèce biologique !), Dieu, les Anges, Satan, Sainte Nitouche et les autres – le petit monde du Paradis et de l'Enfer, où tout peut s'imaginer, puisque personne n'en est jamais revenu ;-) … Voici une évocation du paradis des escargots, de celui des moules et de celui des huîtres. Le sommet : le conseil d'administration du Paradis ;-)

Passe moi le ciel
N° 3 : Tas de beaux saints !
Stuf – Janry
Ed. Dupuis


PARADIS DES ESCARGOTS
!
Z
À MOI LES PETITES LIMACES !
...LES LAITUES JUTEUSES !
!
Z
189


LE PARADIS DES CHENILLES ? PF! C'EST PAS TOUT PRÈS! VOUS VOYEZ LE CIRRUS, LÀ-BAS ? BON...
PARADIS DES ESCARGOTS
TROIS JOURS PLUS TARD ...
HOLÀ! VOUS N'Y ÊTES PAS DU TOUT! VOUS DEVEZ RETOURNER SUR VOS PAS ET...
PARADIS DES MOULES
SUIVANT!
PARADIS DES HUÎTRES
CE N'EST QU'UNE PERLE, JE M'EN DOUTAIS! ALLEZ-Y...
SUIVANT!
CHIC!


CINQUANTE ESPÈCES DISPARAISSENT CHAQUE ANNÉE, J'EN AI MA CLAQUE!
ILS ONT DES PORTE-PARAPLUIES AVEC NOS JAMBES!
LEUR DERNIÈRE TROUVAILLE : LE STEAK D'AUTRUCHE!
JE PRÉFÈRE NE RIEN DIRE.

Conseil d'administration ~~de la SBM~~ … euh du Paradis

Dieu – St Pierre éléphant - St Pierre autruche - St Pierre escargot - St Pierre des Hommes

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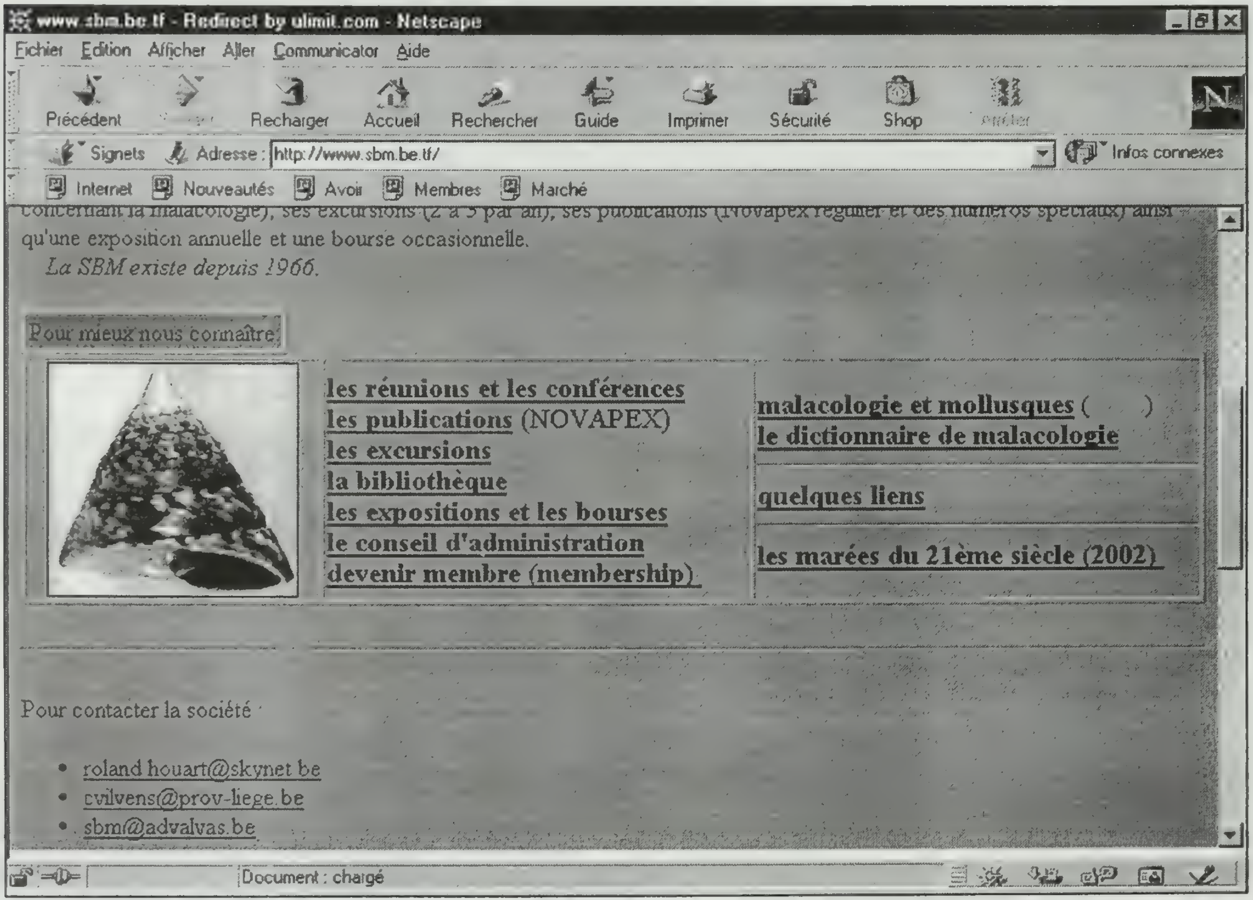
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concernant la malacologie), ses excursions (2 à 3 par an), ses publications (Novapex regulier et des numéros spéciaux) ainsi qu'une exposition annuelle et une bourse occasionnelle.

La SBM existe depuis 1966.

Pour mieux nous connaître

les réunions et les conférences
les publications (NOVAPEX)
les excursions
la bibliothèque
les expositions et les bourses
le conseil d'administration
devenir membre (membership)

malacologie et mollusques ( )
le dictionnaire de malacologie

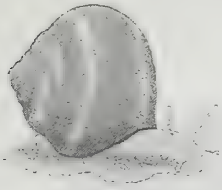
quelques liens

les marées du 21ème siècle (2002)

Pour contacter la société

- roland.houart@skynet.be
- cvilvens@prov-liege.be
- sbm@advalvas.be

Le site Internet de la SBM :
http://www.sbm.be.tf/



Quoi de neuf ?

Etienne MEULEMAN, Roland HOUART et Claude VILVENS

EXPOSITION DE LA SOCIÉTÉ BELGE DE MALACOLOGIE A GENVAL : LE BILAN

Suite à une demande du responsable du Musée de l'Eau et de la Fontaine à Genval, la Société Belge de Malacologie a organisé une exposition de coquillages.

Cette exposition organisée dans le carde des Journées mondiales de l'eau et le week-end de la « fête de l'eau » présentait aux visiteurs divers mollusques belges et étrangers.

Les vitrines réparties un peu partout dans le musée permettaient aux visiteurs de découvrir par exemple la plupart des mollusques dulcicoles de Belgique (gastéropodes et bivalves) ainsi qu'un échantillon de quelques grosses coquilles des mer chaudes.

Cette exposition se voulait visuelle mais aussi didactique. En effet de nombreux panneaux disposés un peu partout dans les salles du musée apportaient un petit plus qui attirait l'attention des visiteurs de passage.

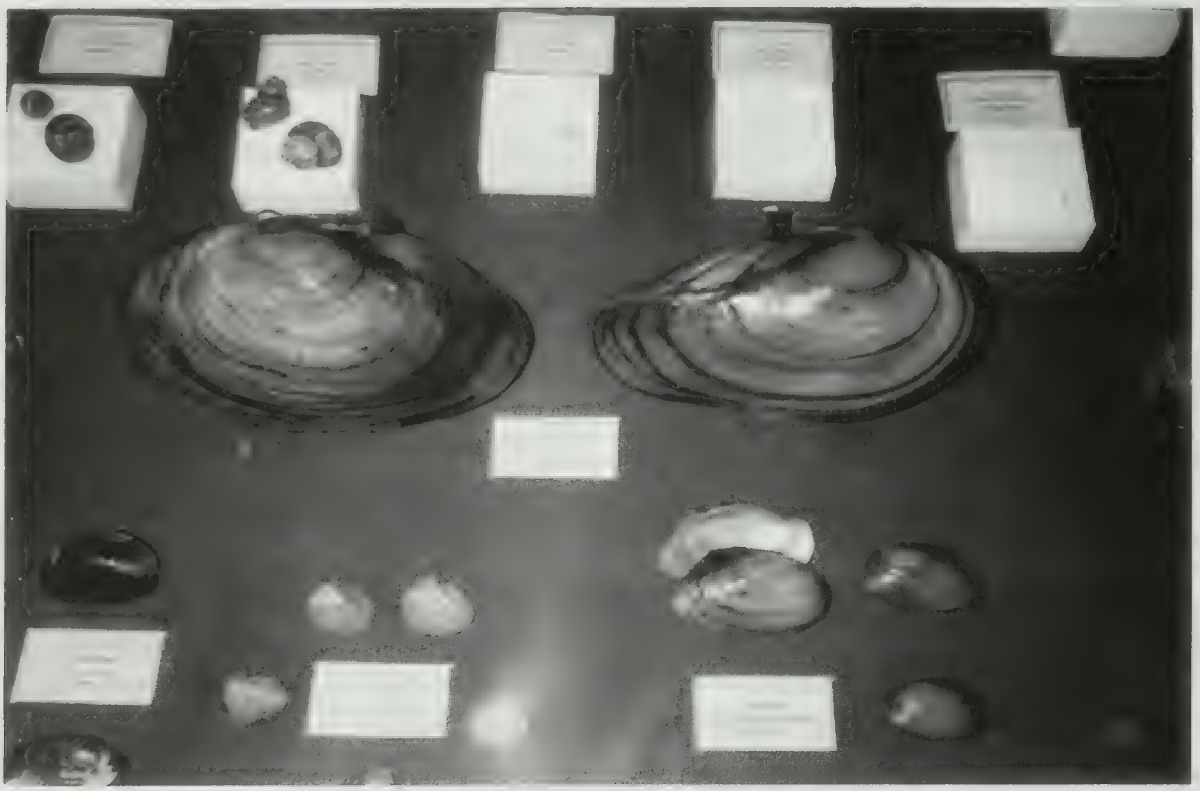
Pour couronner le tout, une exposition de photographies sous-marines aux couleurs surréalistes plongeait les curieux dans un monde inconnu de beaucoup.

Voilà donc une activité bien agréables où nous avons pu retrouver la bonne humeur de chacun des membres participants. Même si le nombre de visiteurs ne fut pas légion, les personnes qui ont fait le déplacement sont reparties heureuses d'avoir pu découvrir des merveilles naturelles parfois proches de nous. Et comme on dit toujours, mieux vaut la qualité que la quantité.

Merci encore à toutes les personnes qui ont contribués de près ou de loin à la réussite de cette exposition.

Etienne MEULEMAN

Les photographies suivantes présentent deux vitrines de l'exposition.



UNITAS MALACOLOGIA

World Congress of Malacology Perth, Western Australia
11-16 July 2004

The next World Congress of Malacology will held in Perth, Western Australia, the first such Congress in the Southern Hemisphere. It will be held on the campus of The University of Western Australia, from 11 to 16 July 2004. The UWA campus, on the banks of the Swan River, is one of the most beautiful in Australia. It is the 15th International Congress of UNITAS MALACOLOGICA and is being jointly organised by Unitas and the Malacological Society of Australasia. The Congress will adopt the style of the last two highly successful Congresses in Washington, D.C., USA (1998) and Vienna, Austria (2001). Both world congresses have been very successful, and we expect the Perth meeting to be just as successful. The congress offers international mollusc workers a wonderful opportunity to come to Australia. Several major symposia are planned:

- Phylogeny of molluscs;
- Molluscan aquaculture and fisheries;
- Ecology of molluscs;
- Special sessions on particular groups (such as bivalves) and other topics (e.g. conservation) are also planned or can be included.

There will also be contributed paper sessions there will be a special poster session with posters on display throughout the conference The conference will start with an icebreaker on Sunday night, 11 July 2004, with sessions on Monday, Tuesday, Thursday and Friday. The conference dinner will either be on Thursday or Friday night. Three-star and student accommodation will be available on the university campus and 3 star plus accommodation in hotels 5 km or a 10 minute taxi trip away from the conference venue. A choice of four excursions is tentatively planned for Wednesday:

- field trip to Rottnest Island, just off the Perth coastline;
- dive expedition to Rottnest;
- river cruise up the Swan River to one of the local wineries; and
- bus tour of Perth and the coastal city of Fremantle.

Further information will be put on the following websites as it becomes available. Alternatively, information can be obtained from the Conference Organiser.

Unitas Malacologica (interim address) http://www.inter.nl.net/users/Meijer.T/UM/um.html

Malacological Society of Australasia http://www.amonline.net.au/malsoc

CONFERENCE ORGANISER
Dr Fred Wells
Western Australian Museum,
Perth 6000, Western Australia,
Australia
wellsf@museum.wa.gov.au.

Un membre de la Société Belge de Malacologie à l'honneur lors de la bourse d'Antwerpen

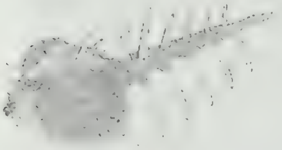
La S.B.M. s'est à nouveau bien défendue à la Bourse d'Anvers, ce début du mois de mai:

Le troisième prix, accordé par un jury de notables de la malacologie ainsi que le premier prix du public ont été décernés à Jacques et Rita Senders (c'est devenu une habitude) pour la présentation d'un spécimen de qualité exceptionnelle de *Angaria tyria* (Reeve, 1842), récolté à Shark Bay (cela ne s'invente pas ...), dans le Nord Ouest Australien.

Et pourtant ... la concurence était rude: le premier prix est allé à un gigantesque spécimen (record du monde avec 28,3 cm.) de *Pleurotomaria rumphii* appartenant à Don Pisoor tandis que le deuxième prix récompensait Cris Vos, pour une *Tonna melanostoma* d'une grandeur nécessitant un emplacement adéquat pour son rangement !!!

Notre modeste *Angaria* paraissait vraiment minuscule avec ses 50 mm de diamètre, mais il est vrai que Koen Fraussen avait obtenu un prix à la Bourse de 2000 pour lequel il avait heureusement apporté un microscope binoculaire pour ses démonstrations de "micro shells".

Jacques et Rita SENDERS



Quelques nouvelles publications

Roland HOUART

1. Quelques livres

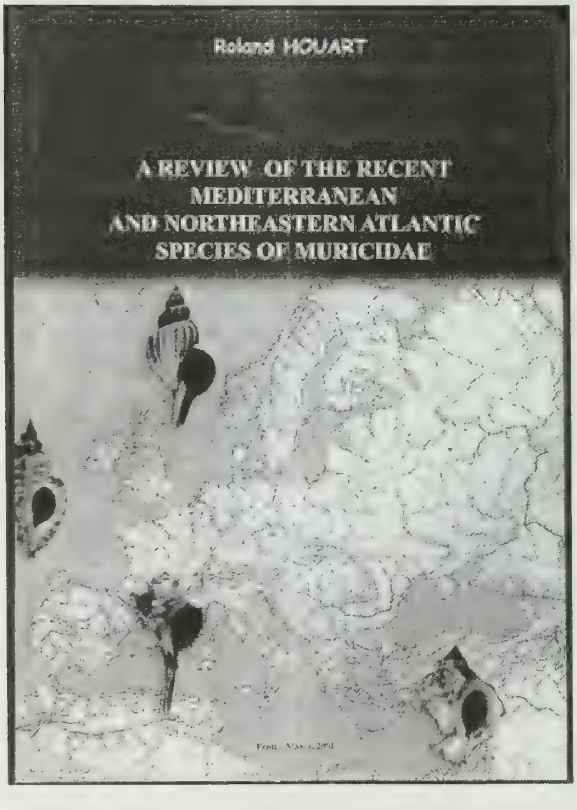
(NDLR: Charité bien ordonnée ... :)

A REVIEW OF THE RECENT MEDITERRANEAN AND NORTHEASTERN ATLANTIC SPECIES OF MURICIDAE

par **Roland HOUART**

pp. 1-227, 526 Figs (N/B et couleurs)
Format: 215 X 305 mm, couverture rigide.
Prix: 83 Euros + frais d'envoi.

Evolver, Rome.
conchiglia@evolver.it



Roland HOUART

A REVIEW OF THE RECENT MEDITERRANEAN AND NORTHEASTERN ATLANTIC SPECIES OF MURICIDAE

Les espèces actuelles appartenant à la famille des Muricidae sont révisées et illustrées. Soixante espèces sont reconnues comme appartenant à la faune européenne. Sept de celles-ci vivent principalement dans d'autres régions, dont l'Afrique occidentale, mais leur distribution s'étend également dans la zone étudiée. Huit autres espèces ont été introduites accidentellement, dont trois en Méditerranée orientale, probablement depuis la mer Rouge via le Canal de Suez.

Les espèces sont décrites et commentées, leur distribution est indiquée sur une carte géographique. La synonymie est donnée pour chaque espèce. Une nouvelle espèce et une nouvelle sous-espèce sont décrites: *Pagodula parechinata* n. sp. des Iles Canaries et *Ocinebrina aciculata exilis* n. subsp. de Tunisie.

Des lectotypes sont désignés pour *Trophon curta* Locard, 1892, *Muricopsis inermis trifasciatus* Nordsieck, 1972, *Muricopsis inermis obsoleta* Nordsieck, 1972 et *Muricopsis atra* Nordsieck, 1972.

Toutes les espèces sont illustrées à l'aide de plusieurs spécimens, dont de nombreux holotypes, syntypes ou paratypes.

Des photographies prisent au microscope électronique illustrent des radulas et des protoconques.

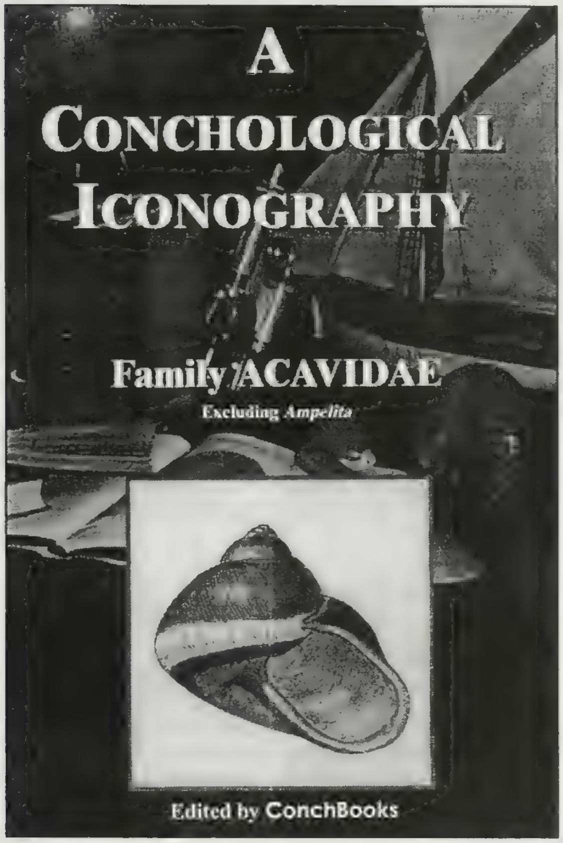
A CONCHOLOGICAL ICONOGRAPHY

Family ACAVIDAE (excluding *Ampelita*)

par **K. GROH & G.T. POPPE**

pp 1-69 + 44 planches couleurs.

Publié et distribué par ConchBooks
Mainzer Str. 25, D-55546 Hackenheim, Allemagne.
2002.
conchbooks@conchbooks.de



Avec ce volume nous entrons de plein pied dans le monde des mollusques terrestres. Les photographies sont de qualité identique aux volumes précédents et permettent aisément l'identification des espèces.

Les auteurs commentent d'abord l'historique de la superfamille des Acavoidea, depuis Thiele (1931) jusque Wade, Mordan & Clarke (2001), en passant par Zilch, Abbott, Nordsieck et les autres. Ils nous livrent ensuite la situation sytématique de la famille des Acavidae, sa distribution, son historique fossile, l'écologie, la biologie et l'historique des collections. Une liste des espèces classées systématiquement est ensuite donnée et précède les remerciements d'usage, les abréviations et la partie systématique.

Chaque espèce y est décrite avec mention de la localisation du matériel type, de la localité type, de la taille, de la distribution géographique, de l'habitat, suivi de la description et de quelques remarques. Chaque description est accompagnée d'une photographie noir et blanc et de la localisation de la distribution géographique de l'espèce à l'aide d'une carte géographique. Le volume se termine par 8 pages consacrées à une sélection de références, par un index et par 44 planches couleurs où chaque espèce est illustrée à l'aide de nombreux spécimens, montrant ainsi la variabilité des coquilles. Les planches 42 à 44 sont consacrées à quelques espèces photographiées *in situ*.

Si les mollusques terrestres ne vous laissent pas indifférent, n'hésitez pas, agrandissez votre bibliothèque et offrez vous ce dernier né du "Conchological Iconography".

TYPES OF MOLLUSCA IN THE ZOOLOGICAL MUSEUM OF MOSCOW UNIVERSITY

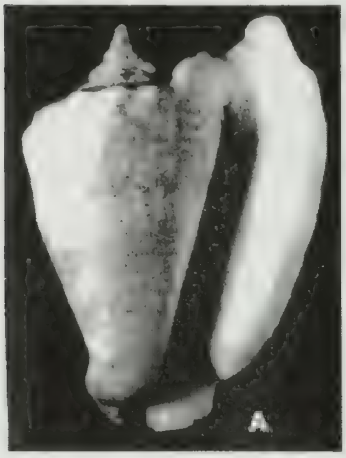
par **D.L. IVANOV et A.V. SYSOEV**

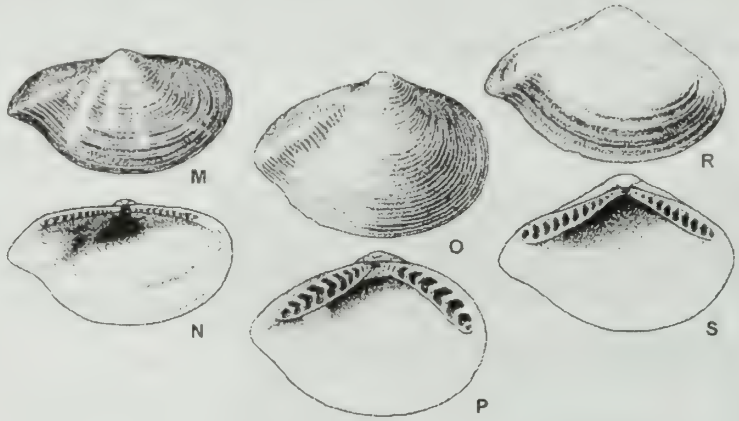
Archives of the Zoological Museum of Moscow State University. Vol. XL
Moscow University Publishing, 2000.
pp. 1-187, pls 1-58.

Format 290 X 220 mm, couverture souple.
Prix: 40 € + frais d'envoi

Ce volume est un catalogue illustré complet des spécimens types de mollusques décrits entre 1807 et 2000 et déposé au Zoological Museum de l'Université de Moscou. La collection est représentée par 539 espèces, dont 423 gastéropodes, appartenant à six classes.

Après un préface relatant l'historique du Zoological Museum et dévoilant le but de cette publication (établir un catalogue de ces espèces parfois décrites et illustrées dans des publications difficilement accessibles et permettre ainsi toute personne de connaître les espèces déposées au Museum et d'avoir accès à l'illustration de l'holotype, du lectotype ou du syntype), les auteurs nous fournissent la liste des espèces. La mise en page se profile sur deux colonnes, celle de gauche en langue russe, celle de droite en anglais. Chaque espèce est accompagnée du nom de l'auteur, de la date de description, de la pagination et de la localité type. La bibliographie complète est reprise à l'arrière de la publication. Le catalogue se termine par la bibliographie, un index et les illustrations: photos noir et blanc et dessins minutieux (voir les exemples ci-dessous).





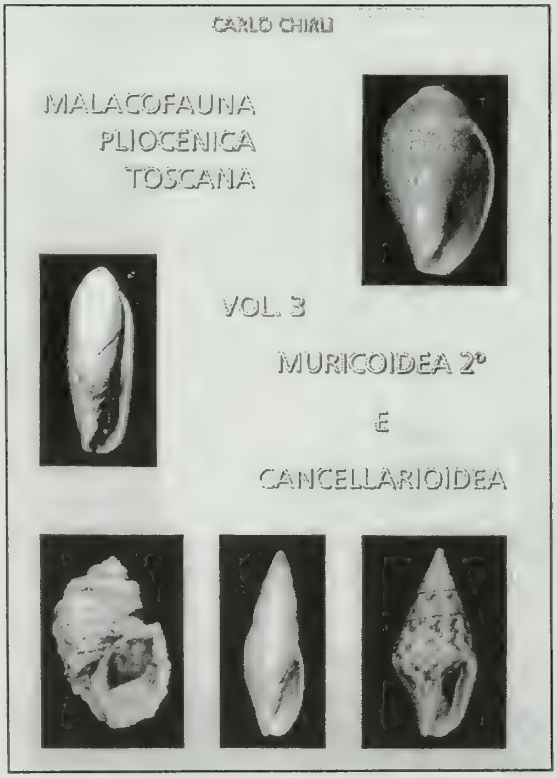
L'utilité de ce genre de publication n'est plus à démontrer et nous ne pouvons que féliciter les auteurs pour un ouvrage de cette importance. A commander d'urgence avant que le stock ne soit épuisé.

MALACOFAUNA PLIOCENICA TOSCANA

par **Carlo CHIRLI**

pp. 1-92, pls 1-37.
Format330 X 240 mm, couverture souple.
Prix: 48 € + frais d'envoi

Carlo Chirli
Via La Pira 33
I-50028 Tavarnelle, Italie.
Février 2002.
e-mail: carlo.chirli@tin.it


CARLO CHIRLI

MALACOFAUNA
PLIOCENICA
TOSCANA

VOL. 3

MURICOIDEA 2°

E

CANCELLARIOIDEA

Après nous avoir fait découvrir les superfamilles des Conoidea (Volume 1) et des Muricoidea (Volume 2), l'auteur nous montre et décrit la faune malacologique fossile appartenant aux Muricoidea (2me partie) et aux Cancellarioidea.

Le livre est écrit en italien et comme pour les deux volumes précédents, celui-ci nous présente chaque espèce accompagnée du nom de l'auteur, de la date de description, de la synonymie, de la bibliographie, des caractères distinctifs (description originale et description complémentaire), de la localité, de la distribution chronostratigraphique et de quelques observations. Chaque espèce est illustrée par d'excellentes photographies noir et blanc représentant parfois de nombreux spécimens d'une même espèce. Les explications des planches se situent en regard de celles-ci et reprennent le nom de l'espèce, l'auteur, les dimensions des spécimens illustrés et la pagination.

Les familles suivantes sont représentées: Columbellidae (16 espèces), Volutidae (1), Olividae (1), Cystiscidae (5), Marginellidae (6), Mitridae (35), Cancellariidae (21). Un nouveau genre, *Calosinia* et deux nouvelles espèces, *Calosinia lydiae* et *Volvarina cozziniana* sont décrits chez les Marginellidae tandis que *Mitra ulivii* est décrite chez les Mitridae.

Un livre qui ne laissera pas insensible les amateurs de la faune malacologique Européenne et en particulier de Méditerranée.

Un peit erratum ...

Oliva shells
The genus *Oliva* and the Species problem

par **B. Tursch et D. Greifeneder**

pp. I-X, 1-568, 29 planches N/B, 48 planches couleur + dessins et photos dans le texte.
Format: 305 X 225 mm, couverture carton rigide.
Prix: 129 € (115 US $) + frais d'envoi (+/- 10 €)
L'Informatore Piceno, Italy
Bosque BMT, S.A., Costa Rica

L'adresse e-mail mentionnée dans NOVAPEX 2(4) est inexacte, voici la bonne: **malacologia@fastnet.it**

2. Quelques publications

Pour rappel, il s'agit ici de publications ne se trouvant à la bibliothèque de la SBM, mais qu'il est possible de consulter à l'IRSNB et le plus souvent à l'ULB. On peut consulter Roland Houart à ce sujet.

A peculiar high-tidal molluscan assemblage from a Madeiran boulder beach, par E. Rolán & J. Templado. *Iberus* 18 (2): 77-97 (2000).

* * *

A new species of *Alvania* (Mollusca, Rissoidae) from Annobón (Gulf of Guinea, West Africa, par E. Rolán. *Iberus* 19 (1): 49-52 (2001).

* * *

The genus *Mitrolumna* (Gastropoda, Turridae) in west Africa, par E. Rolán & F. Boyer. *Iberus* 19 (1): 115-128 (2001).

* * *

Two new species of the genus *Monophorus* (Gastropoda, Triphoridae) in the east Atlantic and Mediterranean Sea, par E. Rolán & A. Peñas. *Iberus* 19 (2): 31-40 (2001).

* * *

New species of Trochidae (Mollusca, Gastropoda) from the Cape Verde archipelago, par E. Rolán & J. Templado. *Iberus* 19 (2): 41-55 (2001).

* * *

The endemic species of *Conus* from Angola. 2. Description of three new species, par E. Rolán & D. Röckel. *Iberus* 19 (2): 57-66 (2001).

* * *

A new species of the genus *Wanganella* (Mollusca, Skeneidae) from Mauritania, par E. Rolán & F. Gubbioli. *Argonauta* 14 (2): 5-8 (2000).

* * *

Sayella micalii Peñas & Rolán, 1997 junior synonym of *Pyramidella dolabrata* Linné, 1758 (Mollusca, Heterostropha), par A. Peñas & E. Rolán. *Argonauta* 14 (2): 9 (2000).

* * *

A new species of the genus *Notosetia* (Mollusca, Skeneidae) from Ghana, par E. Rolán & P. Ryall. *Argonauta* 14 (2): 39-41 (2000).

* * *

Ontogenic changes in the radula of *Conus ermineus* Born, 1778, and its application to the phylogeny of the radular tooth, par E. Rolán & F. Boyer. *Argonauta* 14 (2): 43-48 (2000).

* * *

Revision of Southern Australian Cenozoic fossil Pectinidae (Mollusca: Bivalvia), par A.G. Beu & T. A. Darragh. *Proceedings of the Royal Society of Victoria* 113 (1): 1-205.

Pour tous les amateurs de Pectinidae, voici un ouvrage qu'il ne faudra pas ignorer. Il s'agit évidemment de fossiles, mais il n'empêche qu'il y a de nombreux genres qui abritent également des espèces récentes ou dont l'espèce type est une espèce actuelle. Un travail de longue haleine qui a nécessité quelques années de travail aux auteurs. Les espèces sont minutieusement décrites avec présentation de la synonymie complète et de la liste du matériel examiné, le tout accompagnés de nombreuses remarques. Toutes les coquilles ainsi que les détails de la microsculpture sont illustrés à l'aide d'excellentes photographies noir et blanc.
Je pense intéressant de reproduire ici le résumé.

"Fossil Pectinidae are revised from Paleocene To Pleistocene rocks of Western Australia, South Australia, Victoria and Tasmania (Carnarvon, Perth, Bremer, Eucla, St Vincent, Murray, Otway, Gippsland and Bass basins). They are referred to 17 genera (four newly described) and at least 55 species, of which 19 are newly described and at least 10 left unnamed. Two subfamilies are recognised: Camptonectinae, with one new Paleocene species, *Delectopecten crassistriatus*, and Pectininae, with six tribes: (1) Chlamydini, much the largest group in Australia, with 11 genera, including new genera *Abrachlamys, Austrohinnites and Dichotochlamys,* and new species *Abrachlamys toolinnensis, Notochlamys kendricki, N. nanarupensis, N. squamundata, Serripecten carteri, S. excultatus, S. squamocostatus, Talochlamys badioriva, T. laticostata, T. multilamellata and Veprichlamys leprosa*; (2) Adamussiini, containing only one species of *Victoripecten* gen. nov.; (3) Mimachlamydini, containing only six species of *Mimachlamys,* of which *M. heterophyseta* is a new Pleistocene and Recent species; (4) Decatopectinini, containing only three species of *Annachlamys,* of which *A. rhipidata* is new; (5) Palliolini, containing only *Mesopeplum,* with new species *Mesopeplum(?) contrainflatum, M. minimum and M. divergens*, and (6) Pectinini, containing only *Pecten* and *Amusium,* with new species *A. subcostatum* and *A. morganense.*
Nine (or possibly 10) genera and two species [*Serripecten yahliensis* (Tenison Woods), *S. hutchinsoni* Hutton, and *Zygochiamys delicatula* Hutton] are in common with New Zealand.
The resulting new pectinid biostratigraphy will help correlate shallow-water lithologies in southem Australia. The main new resuits here are: (1) scallops present in Dry Creek Sands, St Vincent Basin, include *Austrohinnites polyaktinos, Mesopeplum subconvexum* and *Serripecten semilaevis,* demonstrating that lower Dry Creek Sands are coeval with Bookpurnong Formation (Bairnsdalian) in the Murray Basin; and (2) Mannum Formation (Longfordian, Murray Basin) contains six scallops absent from the overlying Morgan Limestone (Balcombian), whereas Morgan Limestone contains four scallops absent from Mannum Formation."

* * *

Description of a new species of *Thais* (Mollusca: Neogastropoda: Muricidae) from Taiwan, based on morphological and allozime analyses, par K.S. Tan & L.L. Liu. *Zoological Science* 18: 1275-1289 (2001).

* * *

Assessing the magnitude of species richness in tropical marine environments: exceptionally high numbers of molluscs at a New Caledonia site, par P. Bouchet, P. Lozouet, P. Maestrati & V. Héros. *Biological Journal of the Linnean Society* 75: 421-436 (2002).

Les récoltes de mollusques marins réalisées pendant 400 jours dans 42 stations dans la région de Koumac (Nouvelle-Calédonie) ont révélées la présence de 2738 espèces.

* * *

Checklist of shell-bearing gastropods of the northwestern Pacific, par A.N. Golikov, B.I. Sirenko, V.V. Gulbin & E.M. Chaban. *Ruthenica* 11 (2): 153-173 (2001).

Autres régions, autres chiffres: 751 espèces et sous-espèces sont recensées. La liste est basée sur de nombreux articles et sur les résultats non publiés de l'étude du matériel déposé au Laboratoire de Recherches Marines de l'Institut de Zoologie de l'Académie Russe des Sciences à St Petersburg. La liste des espèces est fournie.

* * *

Species checklist of Muricidae (Mollusca: Gastropoda) in the South China Sea, par K.S. Tan. *The Raffles Bulletin of Zoology*, suppl. 8: 495-512 (2000).

❧

Seasonal growth in two species of *Thais* (Mollusca, Gastropoda, Muricidae) on the East coast of peninsular Malaysia - a preliminary study, par K.S. Tan. *Phuket Marine Biological Center Special Publication* 19 (1): 75-84 (1999).

❧

Imposex in *Thais gradata* and *Chicoreus capucinus* (Molluca, Neogastropoda, Muricidae) from the Straits of Johor: a case study using penis length, area and waight as measures of Imposex severity, par K.S. Tan. *Marine Pollution Bulletin* 39 (1-12): 295-303.

❧

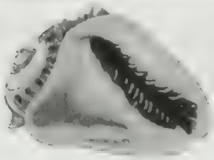
Petite annonce

A vendre, collection de coquillages comportant de nombreuses familles, bivalves et gastéropodes. Très riche en Cypraeidae et en Pectinidae. La collection est de préférence à vendre dans sa totalité.
Pour tous renseignements prière de contacter Mme P. Heirman. Tél.: 04/341.37.26.
Collection to sell: bivalves and gastropods. Many specimens of Cypraeidae and Pectinidae. Please contact (in french): Mme P. Heirman. Tél.: 32.4.341.37.26.

Tout le monde parle des mollusques

Même le magazine **Athena** (Recherche et développement technologique), en sa rubrique "Des chiffres qui comptent" de son numéro 180 :

"En une nuit, la limace rouge - *Arion rufus* - est capable d'ingérer l'équivalent de 50% de son poids (soit 5 à 10 grammes) en pousses tendres et en salade. Cela peut paraître peu, mais les nuits se succèdent et les limaces aussi !"



Nous avons reçu

Claude VILVENS

AMERICAN CONCHOLOGIST

(U.S.A. Sud-Est)
Vol. 29, N° 4, décembre 2001

- J. MILLER : Eleuthera : 100 miles of shelling paradise
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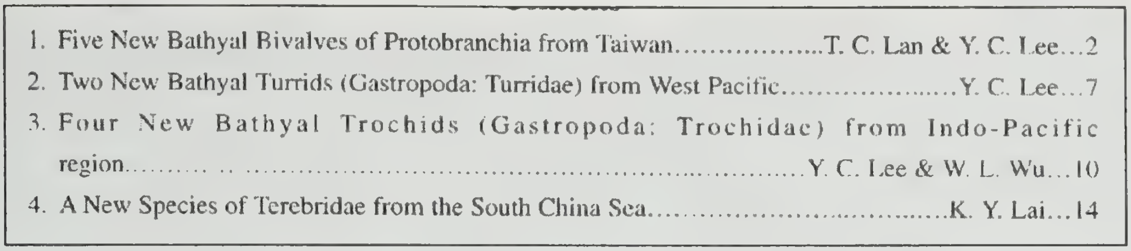

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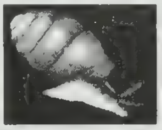

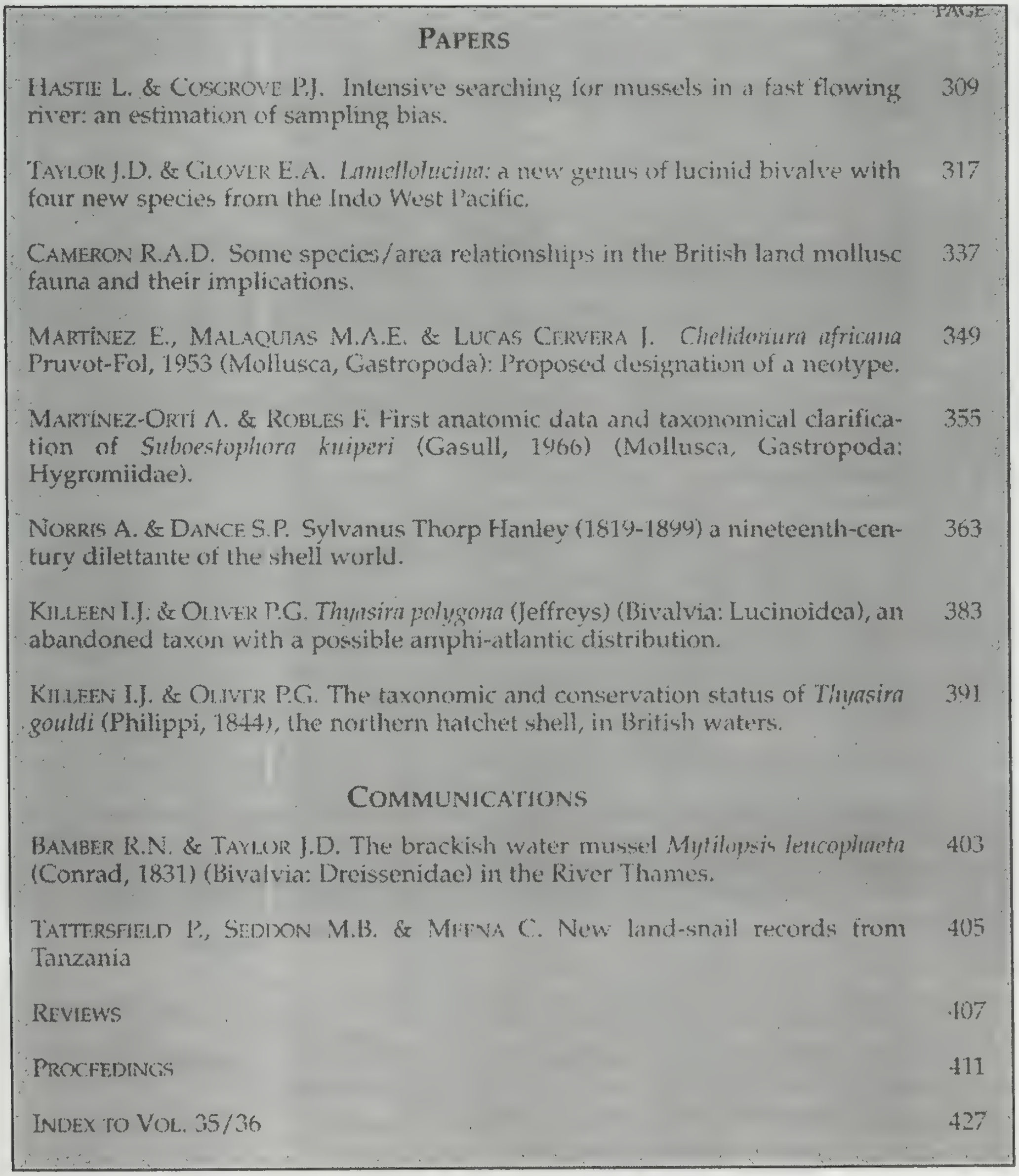

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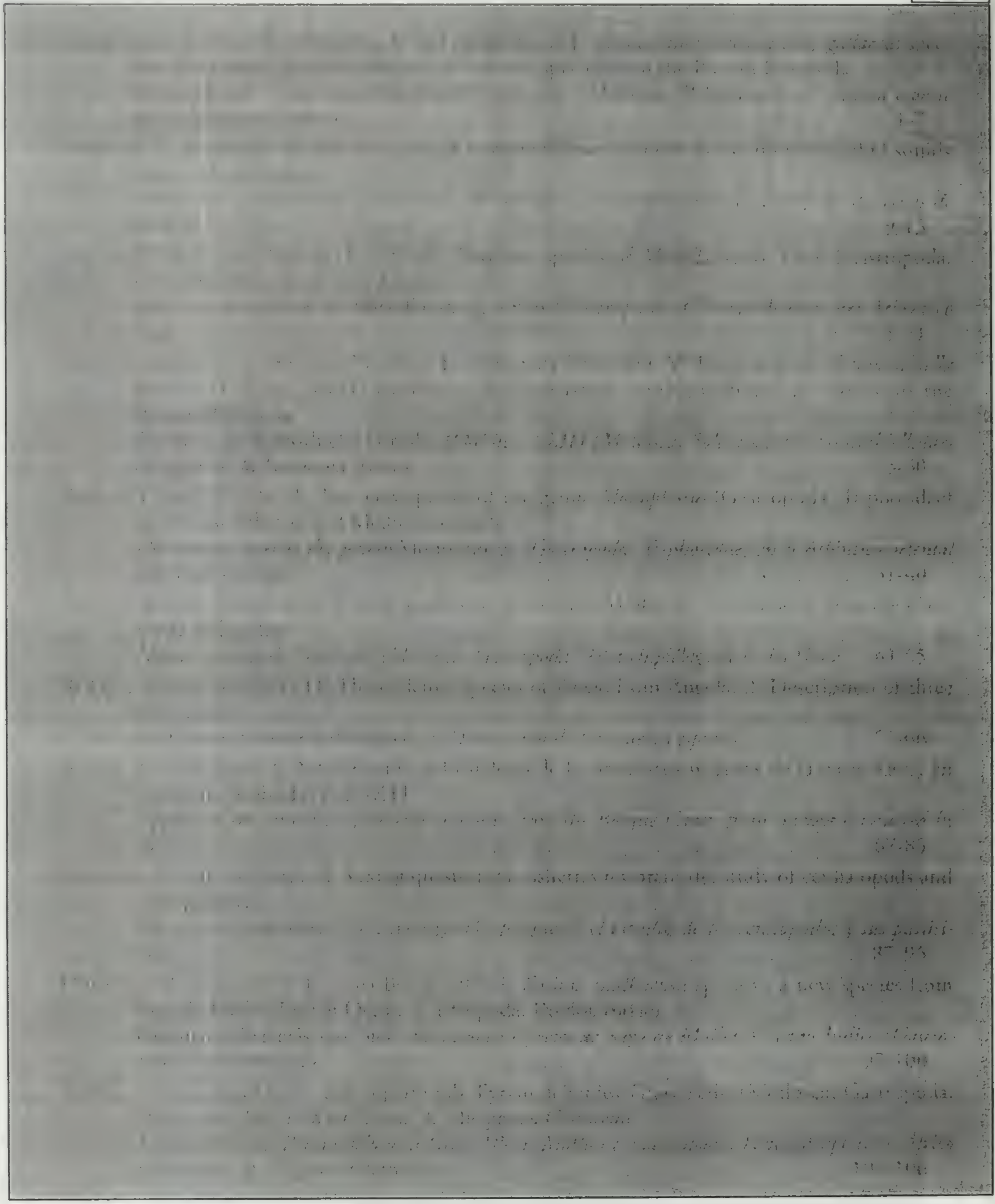

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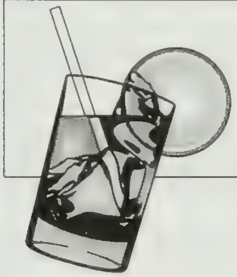
Le banquet de la SBM

Pour entamer la rentrée dans la bonne humeur et nous raconter nos folles aventures de vacances, nous vous proposons de nous retrouver au traditionnel



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le samedi 7 septembre 2002
au restaurant :
Le Rustique

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Comme l'année précédente, les menus proposés ne nous sont pas encore connus, étant donné qu'ils changent chaque mois. Cependant, le menu comprendra :

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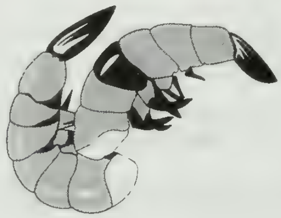
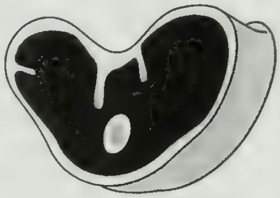
- 6 entrées au choix
- 6 plats au choix
- dessert + café
  Extra en supplément.





Prix : 32,50€

Il est impératif de réserver afin que le restaurateur puisse nous réserver le meilleur accueil

Comment réserver ?
Pour le 28 août 2002, au plus tard, il convient de virer la somme correspondant au nombre de menus réservés au compte BBL : **310-1142433 – 53** de
Madame An**nie Langleit**, avenue Cicéron, 27/92 à 1140 – Bruxelles,
(pas de paiement à la SBM, s'il vous plaît !)

Nous nous réjouissons de vous rencontrer lors de cette joyeuse réunion !

Prochaines activités de la SBM

Claude VILVENS

Lieu de réunion : Médiathèque de l'Institut St Joseph - Rue Félix Hap 14 - 1040 Bruxelles
à partir de 14h. *Sonnez et l'on vous ouvrira !*

ATTENTION ! Nos activités nous emmènent dans diverses salles (pour des projections ou des montages audio-visuels). Il ne nous est donc plus possible d'ouvrir les portes à distance après 15H.

SAMEDI 7 SEPTEMBRE 2002
Tout le monde : Reprise de contact : qu'avons nous fait de beau durant les vacances et qu'avons nous rapporté ? De belles coquilles ? De belles photos ? Quelques maladies estivales ;-) ?
Atelier WEB (animation : **Claude VILVENS**) : le point sur le site de la SBM – projets de développements futurs : apportez tous vos idées et votre énergie !
... C'est pas fini, c'est pas fini !
A 19h, **le banquet annuel de la SBM** (voir annonce page précédente) :

***

SAMEDI 28 SEPTEMBRE 2002
L'excursion d'automne de la SBM
Existe-t-il un coin de Wallonie qui nous ait échappé ? Oh que oui ! Pour combler cette lacune, nous irons explorer une zone située sur la province de Namur et/ou celle de Liège. Comme d'habitude, Etienne et Claude vont explorer (et ensemencer si nécessaire ;-) ...). Les détails : sur Internet ou en contactant Roland (Roland.Houart@skynet.be ou 016/78.86.16) ou Claude (cvilvens@prov-liege.be ou 04/248.32.25) une semaine avant le jour dit.
Comme d'habitude, prévoyez votre bonne humeur ... et envisagez aussi bottes et vêtements de pluie (au cas, totalement improbable, où il pleuvrait légèrement ;-) ...).

***

SAMEDI 19 OCTOBRE 2002
Roland HOUART : ~~Les Trochidae~~ (oups ! faute de frappe ;-) !) **Les Muricidae : la suite de la saga.**
"L'homme qui aimait les Muricidae" (je vous laisse deviner ce qu'aime le Vice-Président ;-) ...) envisage donc de nous parler, avec toute la compétence et la rigueur qu'on lui connaît, de Muricidae. C'est bien cela, c'est la suite de sa série d'exposés. Il nous reparlera de la classification de la sous-famille des Muricinae avec un aperçu des genres et sous-genres revus jusqu'à présent. Il abordera ensuite la première partie de la sous-famille des Ergalataxinae: genres *Ergalatax*, *Muricodrupa*, *Pascula*, *Cronia* et *Lataxiena* (un total de 33 espèces).

***

SAMEDI 9 NOVEMBRE 2002
Christiane DELONGUEVILLE et Roland SCAILLET : Une marée en Bretagne.
Nos deux spécialistes de la malacofaune d'Europe nous emmènent dans un lieu que nous croyons bien connaître : la zone des marées et de surcroît en Bretagne ! Mais que de surprises nous attendent ...

***

SAMEDI 30 NOVEMBRE 2002
Vidéo conférence : les Mollusques sur la toile !
Deux ou trois court-métrages vidéo sur les Mollusques nous seront proposés. **Roland HOUART** nous fera partager quelques unes des séquences enregistrées dont il dispose.

***

SAMEDI 14 DECEMBRE 2002
Marie-Louise BUYLE et **Annie LANGLEIT : Les empreintes musculaires chez les Bivalves.**
Notre duo féminin de choc (vous pensez : la bibliothèque et les comptes ;-) !) va donc nous emmener chez ces Mollusques souvent oubliés des collectionneurs de Cônes ou de Porcelaines : ces Bivalves pour lesquels l'empreinte musculaire, avec la charnière, constitue un élément incontournable d'identification.

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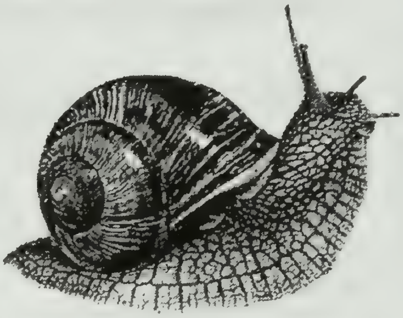

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Quarterly of the Belgian Malacological Society

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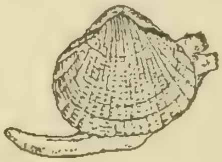

Comments on a group of small *Morula* s.s. species (Gastropoda: Muricidae: Rapaninae) from the Indo-West Pacific with the description of two new species

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KEYWORDS. Mollusca, Gastropoda, Muricoidea, Muricidae, Rapaninae, *Morula* s.s., Indo-West Pacific.

ABSTRACT. From a total of twenty-three Recent *Morula* s.s. species, eight are revised and two are described as new: *M. peasei* n. sp. from French Polynesia and *M. albanigra* n. sp. from Guam and Okinawa. The type material was examined for each species and is illustrated. The species differ mainly in detail of spiral sculpture, internal apertural denticles, and color. A lectotype is selected for *Morula parva* (Reeve, 1846). The twenty-three species are illustrated.

RESUME. Pour un total de vingt-trois espèces actuelles de *Morula* s.s., huit espèces sont révisées et deux sont décrites pour la première fois: *M. peasei* n. sp. de Polynésie Française et *M. albanigra* n. sp. de Guam et d'Okinawa. Le matériel type a été examiné pour chaque espèce et est illustré. Les espèces se distinguent surtout par leur sculpture spirale, par la position, le nombre et la forme des dents internes de l'ouverture et par la couleur de la coquille. Un lectotype est sélectionné pour *Morula parva* (Reeve, 1846). Les vingt-trois espèces sont illustrées.

INTRODUCTION

Three recent studies have led me to start this review: Kool's (1993) review classification, Johnson's (1994) compilation of taxa named by W.H. Pease, and Merle's (1999) clarification of terminology to be used to determinate the position of spiral cords, of the internal apertural denticles and other shell characters in Muricidae.

Although ontogeny is unknown for most of the species examined herein, a careful examination of the sculpture of all whorls and of the denticles of the inner side of the outer lip in both young and adult specimens was sufficient to determinate the position and the nomenclature of the spiral cords and of the apertural denticles for 7 species. The remaining 3 species are described but with some doubt about the position and the terminology of the spiral cords.

The morphology of the radula and of the operculum in Rapaninae tends to differ strongly from genus to genus, for example between *Thais* s.s., *Rapana*, *Drupella* and *Morula*. The radulae of *Morula* and *Habromorula* species are rather similar in all the examined species. However, some minor differences, such as strength of marginal denticles, and/or shape of the central cusp may be observed in some species. A study based on more living material should reveal if these differences are stable, intraspecifically variable, or sexually dimorphic as recorded in some *Morula* species (Fujioka, 1985). The operculum is similar in all species of *Morula*, being narrowly ovate with a lateral nucleus in lower right.

To my knowledge, 23 living *Morula* s.s. species are known, which are listed below. Names in bold are revised in the present paper.

***M. albanigra* n.sp.**
M. anaxares (Kiener, 1835), Indo-West Pacific (Fig. 61)
***M. angulata* (Sowerby, 1893)**
M. aspera (Lamarck, 1816), Indo-West Pacific (Fig. 49)
***M. cernohorskyi* Houart & Tröndle, 1997**
  = *Engina parva* Pease, 1868 (not *Ricinula parva* Reeve, 1846)
M. consanguinea (Smith, 1890), Island of Saint Helena, Eastern Atlantic (Fig. 54)
***M. echinata* (Reeve, 1846)**
  = *Engina monilifera* Pease, 1860
M. funiculata (Reeve, 1846), Indonesia, South China Sea, South Japan (Fig. 52)
M. granulata (Duclos, 1832), Indo-West Pacific (Fig. 58)
  = *Purpura tuberculata* Blainville, 1832
  = *Purpura cingulifera* Kiener, 1835
  = *Morulina ceylonica* Dall, 1923
M. marginalba (Blainville, 1832) , Eastern Australia (Fig. 60)
M. musiva (Kiener, 1835), Indo-West Pacific (Fig. 59)
***M. nodicostata* (Pease, 1868)**
  = *Morula parvissima* Cernohorsky, 1987

- *M. nodulosa* (C.B. Adams, 1845), Eastern and Western Atlantic (Fig. 53)
  - = *Ricinula ferruginosa* Reeve, 1846
- *M. oparense* (Melvill, 1912), French Polynesia, Tuamotu and Rapa (Figs 56-57)
- ***M. parva* (Reeve, 1846)**
- ***M. peasei* n.sp.**
- *M. praecipua* Rehder, 1980, Easter Island (Fig. 55)
- ***M. purpureocincta* (Preston, 1909)**
- ***M. rodgersi* Houart, 2000**
- *M. rumphiusi* Houart, 1996, Indo-West Pacific (Figs 50-51)
- *M. striata* (Pease, 1868)[1], Indo-West Pacific (Fig. 62)
- *M. uva* (Röding, 1798), Indo-West Pacific (Fig. 48)
  - = *Murex morum* Fischer, 1807
  - = *Ricinula nodus* Lamarck, 1816
  - = *Morula papillosa* Schumacher, 1817
  - = *Ricinula morus* Lamarck, 1822
  - = *Purpura sphaeridia* Duclos, 1832
  - = *Ricinula alba* Mörch, 1852
- ***M. variabilis* (Pease, 1868)**

Depth and Habitat

Morula species live in the intertidal zone or in shallow water, to approximately 10 m depth, among rocks, coral boulders or dead coral.

Distribution

Most of the *Morula* species have a planktotrophic larval life with characteristic protoconch morphology (Fig. 7) (Bouchet, 1987, Kool, 1983, Middelfart, in litt.). Many species occur throughout the Indo-West Pacific, but some appear to have a narrower geographical range. Others are known from scattered, widely separated localities, presumably due either to the poor knowledge or scarcity of the species only. Two species, *M.consanguina* and *M. nodulosa*, occur in the Atlantic.

An intricate history

Problems began when Pease (1868) described three species in the buccinid genus *Engina* from the Tuamotu Archipelago (then known as Paumotus): *E. nodicostata*, *E. variabilis* and *E. parva*, all of which actually belong to *Morula* (Muricidae). Problems were compounded by the fact that they have been subsequently misidentified many times.

In selecting a lectotype for *E. variabilis* from the three syntypes (MCZ), Cernohorsky (1987) noted that "Tryon (1883) considers *Engina variabilis* to be a synonym of *E. nodicostata* described by Pease (1868) one page earlier. However, Dautzenberg & Bouge (1933) insist that *Morula variabilis* is a good species and they cite several Polynesian localities where the species has been collected". Cernohorsky did not make any decision regarding *E. nodicostata*.

Cernohorsky (1987) also illustrated one of the four syntypes of *Engina parva* in ANSP, adding that all four specimens are greatly worn. The name *Engina parva* Pease, 1868 is a secondary homonym of *Ricinula parva* Reeve, 1846, both being included in *Morula*. Because all syntypes of *E. parva* are worn and faded also because Pease's description is rather conflicting with his illustration and with the specimens, rather to give a new name for *Engina parva* Pease (non Reeve, 1846), Cernohorsky decided to describe it as a new species with clearly recognizable holotype and paratypes. He described it as *Morula parvissima* Cernohorsky, 1987. Unfortunately, as we will see below, he wrongly identified *E. parva* and *E. nodicostata*, as a consequence of which *M. parvissima* becomes a synonym.

Tröndle & Houart (1992) concluded that *E. nodicostata* and *E. variabilis* were synonyms because I then personally examined a specimen received from ANSP labelled "type" with the note "matches the description but not the figure" (Houart & Tröndle, 1992: figs 85-86). I then examined both the "type" (ANSP 34543) and six syntypes (then MCZ 178941). When returning the loan to MCZ I indicated that the 6 syntypes of *E.nodicostata* are in fact *E. parva* Pease, 1868 = *Morula parvissima* Cernohorsky, 1987, following the conclusion of Cernohorsky (1987). In fact, the specimen labelled *E. nodicostata* which I received in loan from ANSP labelled as "type", and illustrated as the holotype in Tröndle & Houart (1992), is identical to *E. variabilis* and is certainly not a type specimen of *E. nodicostata*. The material was probably mixed at some time.

Cernohorsky (1987) illustrated the holotype of *Morula angulata* (Sowerby, 1893), and a specimen from Mururoa Atoll, Tuamotu Archipelago, which he considered to be conspecific. Having observed differences between the holotype of *M. angulata* and the specimen from Tuamotu illustrated by Cernohorsky (1987), Houart & Tröndle (1997) described the latter as *Morula cernohorskyi*. In doing that they also wrongly identified *R. parva*, but without any negative consequence. In fact, *E. parva* is the species subsequently named *M. cernohorskyi*, and *M. parvissima* is conspecific with *E. nodicostata*.

Johnson (1994) selected a lectotype for *E. nodicostata* (now MCZ 260614). He mentioned also a paralectotype (MCZ 260617) where it was noted "matches the description but not the figure". These specimens are part of the above material I received in loan from MCZ (then MCZ 178941).

Wishing to classify all these species once and for all correctly, I decided to examine the whole type material in ANSP and MCZ and to compare everything, together with recently collected material. The result is given below.

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[1] Not *Habromorula striata* (Pease, 1868)

All of the 10 species examined differ in shell morphology and color (see also Table 1 and 2).

Text conventions (after Merle, 1999 and 2001)
See Text Figs A and B

P1 : Shoulder spiral cord.
P2-P6 : Primary spiral cords of the convex part of the teleoconch whorl.
IP : Infrasutural primary spiral cord (primary spiral cord on shoulder).
ID : Infrasutural apertural denticle.
D1-D5 : Abapical apertural denticles.
ADP : Adapertural primary spiral cord on the siphonal canal.
s: secondary spiral cord.

Abbreviations

AIM: Auckland Institute & Museum, Wellington, New Zealand.
ANSP: Academy of Natural Sciences of Philadelphia, U.S.A.
BM(NH): The Natural History Museum, London, U.K.
EPHE: Ecole Pratique des Hautes Etudes, Perpignan, France.
IRSNB: Institut royal des Sciences naturelles de Belgique.
MCZ: Museum of Comparative Zoology, Harvard University, Cambridge, U.S.A.
MHNG: Muséum d'Histoire Naturelle, Geneva, Switzerland.
MNHN: Muséum national d'Histoire naturelle, Paris, France.
NM: Natal Museum, Pietermaritzburg, South Africa.
NMNZ: Museum of New Zealand Te Papa Tongarewa, Wellington, New Zealand.
RMNH: Nationaal Natuurhistorisch Museum, Leiden, The Netherlands.

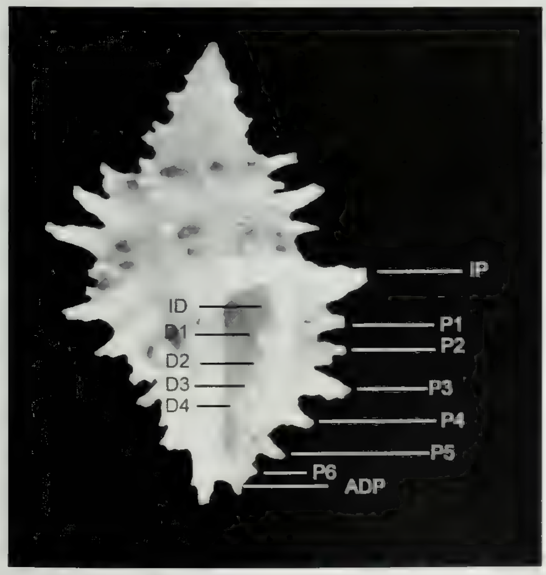
SYSTEMATICS

Family **MURICIDAE** Rafinesque, 1815
Subfamily: **RAPANINAE** Gray, 1853
Genus: ***Morula*** Schumacher, 1817
Subgenus: ***Morula*** Schumacher, 1817
Type species by monotypy: *Morula papillosa* Schumacher, 1817 (non Philippi, 1849) = *Morula uva* (Röding, 1798). Indo-West Pacific.
= *Tenguella* Arakawa, 1965 [type species by original designation: *Morula granulata* (Duclos, 1832)].
Subgenus: ***Morula***

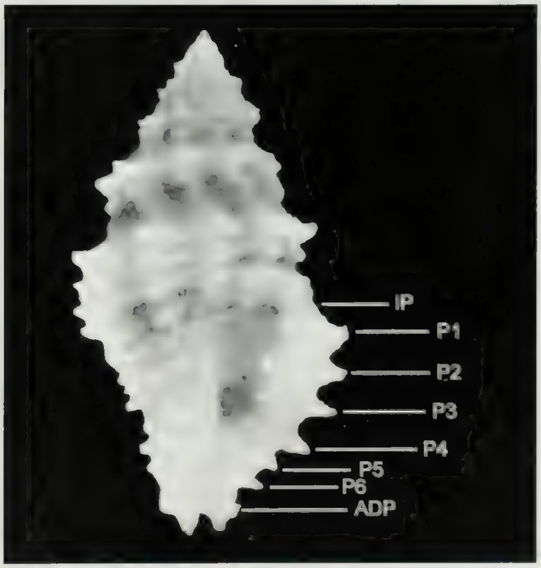
Morula (Morula) albanigra n.sp.
Figs 1-2, 6, 11-13, Text Fig. C

Type material. Guam, Piti Lagoon, 1.5-2 m, among silty dead coral, holotype IRSNB IG 29532.
Paratypes: **Guam**, tip of Glass breakwall, near Mouth of Apra Harbor, 4.5-7.5 m, in rubble: 1ANSP 409825, 1 MCZ 327680, 1 RH; Piti Reef, 3.8-4.5 m, in rubble, 1 AMS C.204975, 1 NMNZ M.273163; Agat Cemetary, 3.8-4.5 m, in rubble, 1 MNHN; Glass breakwall, near Mouth of Apra Harbor, 3-6 m, among rocks, 1 BM(NH) 20020111, 1 NM L5696/1881, Glass breakwall, near Mouth of Apra Harbor, 6m, under rubble, 1 RH.

Type locality. Guam, Piti Lagoon, 1.5-2 m, among silty dead coral.



Text fig. A. Spiral sculpture and apertural denticles of *Morula angulata* (Sowerby, 1893)



Text fig. B. Spiral sculpture of *Morula echinata* (Reeve, 1846)

Other localities. Japan, northern part of Okinawa Island, Cape Bise; Okinawa, Ishigaki Island, Kabira Bay, under dead coral, reef edge, 1 m (Hirofumi Kubo coll.)

Distribution. Central West Guam and Okinawa, living at 1-7.5 m.

Description. Shell small, up to 7.5 mm in length at maturity (holotype), biconical, spinose. Spire high with 4-4¼ protoconch whorls and up to 5 weakly convex, spinose teleoconch whorls. Suture impressed. Protoconch large, conical, with a narrow, weak, single keel abapically, otherwise smooth. Terminal varix heavy, raised, strongly curved, of sinusigera type.
Axial sculpture of teleoconch whorls consisting of high, broad, spinose varices: 9 or 10 on first whorl, 7-9 from second to fourth, last whorl with 7 varices. Other axial sculpture of numerous growth lamellae. Spiral sculpture of broad, sharp cords. First to third whorls with IP and P1 visible, fourth with IP, P1 and P2, last whorl with IP, P1-P6. IP-P1-P3-P4 broader. Presence of small, acute, narrowly open spinelets where axial ribs cross spiral cords. Other spiral sculpture consisting of narrow, numerous threads covering whole shell.
Aperture narrowly-ovate. Columellar lip narrow, smooth or with a single, weak knob abapically; small parietal node adapically. Rim weakly partially erect, adherent at adapical extremity. Anal notch broad, deep. Outer lip weakly erect, with 5 denticles within: DI very low, small, D1 and D2 broad, high, D3 and D4 small, low; D1 largest. Siphonal canal short, weakly dorsally recurved, broadly open, with P6.
White with dark brown band on top of P1, P3 and P5 and small dark brown blotches on tip of siphonal canal.
Operculum light brown with lateral nucleus in lower right. Radula with long central cusp, short lateral denticle and long lateral cusp on each side. Occasionally with a low marginal denticle between lateral and marginal cusps.
Animal white with black blotches (Text Fig. C).

Remarks. *M. albanigra* n.sp. differs from the similar *M. nodicostata* Pease in having a more strongly shouldered, broader and spinose rather than nodose shell, with narrower spiral cords occasionally half as wide and sharper. The columellar lip of *M. albanigra* is white or with darker coloured tip or edge (black or dark brown abapically in *M. nodicostata*), narrower abapically, and the protoconch whorls are entirely glossy white or occasionally only with a very narrow brown line on penultimate and last whorl, compared to the broad brown band in *M. nodicostata*. See also Table 1.

Etymology. *albanigra*: from *alba* (L): white and *nigra* (L): black, in relation to the white and black spiral cords.

Morula (Morula) angulata (Sowerby, 1893)
Figs 18-19; Text Fig. A

Sistrum angulatum Sowerby, 1893: 46, pl.4, fig.3

Morula angulata –KAICHER, 1980: card 2446 (holotype); CERNOHORSKY, 1987: 100 (in part), fig. 19 (holotype).

NOT *Morula angulata* – CERNOHORSKY, 1987: 100 (in part), figs 16, 17-18, 20-21; HOUART & TRÖNDLE, 1987: 99, fig. 76 [= *Morula cernohorskyi* Houart & Tröndle, 1997]

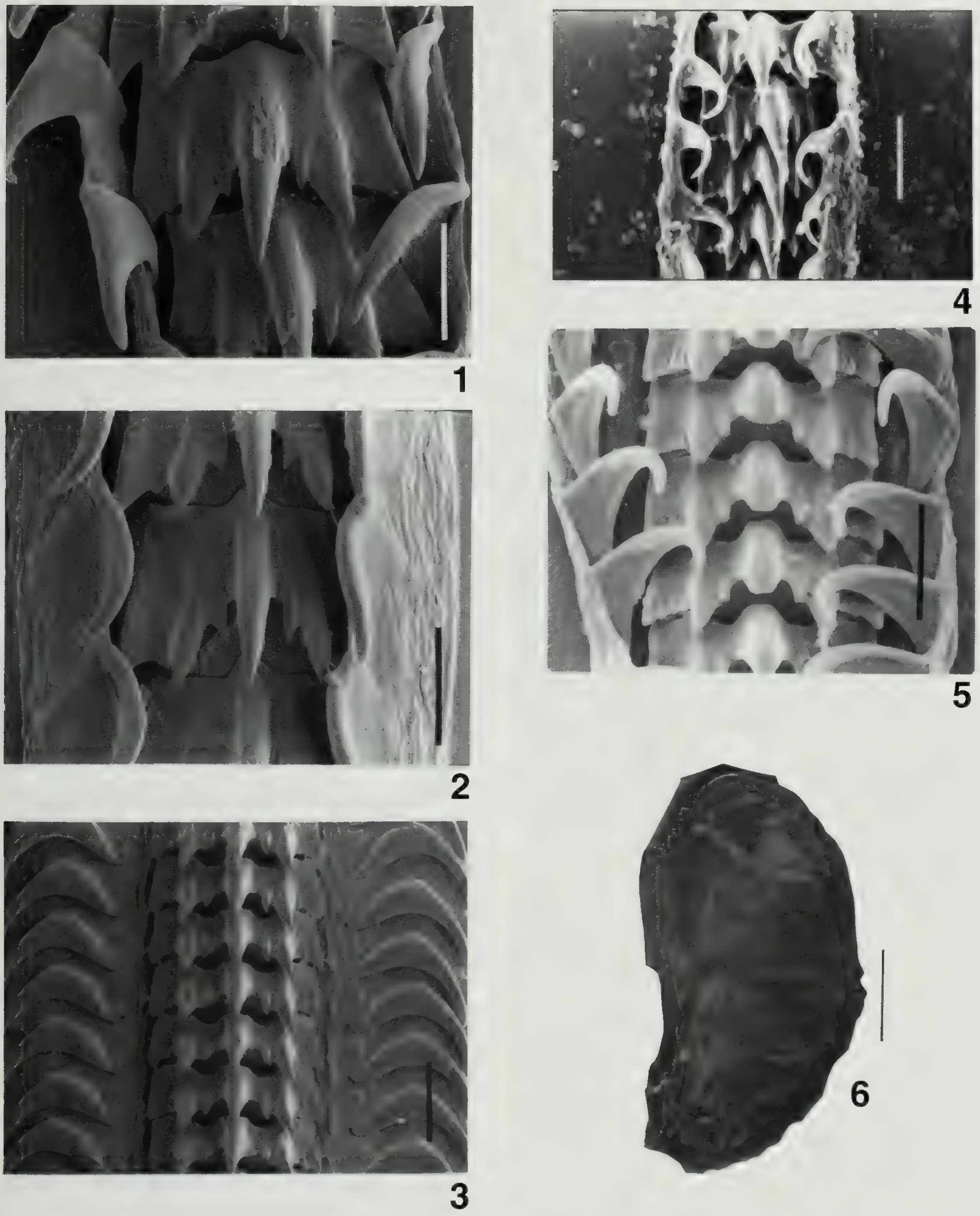
Type locality. Mauritius

Type material. Holotype BM(NH) 1902.11.26.72

Distribution. Currently known from Mauritius (type locality), Society and Tuamotu Archipelago, and Guam.

Description. Shell small, up to 8.5 mm in length at maturity, biconical, spinose, delicate. Spire high with 3.5 protoconch whorls and up to 5 broad, angulate, weakly shouldered teleoconch whorls. Suture impressed. Protoconch large, conical, acute, whorls smooth. Terminal varix strongly curved, of sinusigera type.
Last teleoconch whorl with 6 axial ribs crossed with spiral cords (IP, P1-P5). IP broad, P1 and P2 small, P3 broad, P4 and P5 decreasing in strength abapically. IP forming longest spine at intersection with axial ribs, P1 and P2 short, P3 long, P4 and P5 short.
Aperture narrowly ovate. Columellar lip narrow, weakly flaring, with 2 elongate, strong knobs abapically, rim partially erect, adherent at adapical extremity. Anal notch broad, deep. Outer lip weakly erect with 5 strong denticles within: ID, D1-D4. D1 strongest, D2-D4 of approximately similar size, D2 weakly stronger.
Siphonal canal short, straight, broadly open with P6 and ADP.
Milky-white with dark brown, almost black blotches on P1 on penultimate whorl, on P1 and P2 on last whorl, and on P6. Earlier whorls unformly milky-white. Aperture white.
Operculum light brown with lateral nucleus in lower right. Radula unknown.

Remarks. *Morula angulata* is a delicate, beautiful, but poorly known and probably rare species. It is unusual in having a strongly developed infrasutural cord (IP), starting on the penultimate whorl and giving rise to the longest spine on last teleoconch whorl. P1 is clearly visible on the early teleoconch whorls, but it is almosalf the size of IP on the penultimate and last whorls. See also Table 1.



Figures 1-6

1-2. *Morula albanigra* n.sp., radula (scale bar 10 µm); **3.** *M. purpureocincta* (Preston, 1909), radula (scale bar 20 µm); **4.** *M. echinata* (Reeve, 1846), radula (scale bar 20 µm); **5.** *M. parva* (Reeve, 1846), radula (scale bar 0.20 µm); **6.** *M. albanigra* n.sp., operculum (scale bar 0.5 mm)

Morula (Morula) cernohorskyi Houart & Tröndle, 1997

Figs 20-26

Engina parva Pease, 1868: 276, pl.23, fig. 11 (not *Ricinula parva* Reeve, 1846)
Morula cernohorskyi Houart & Tröndle, 1997: 4, fig. 3

Morula angulata – Cernohorsky, 1987: 100 (in part), figs 16, 17-18 (holotype of *Engina parva* Pease, 1868), 20-21; Tröndle & Houart, 1992: 99, fig. 76 (not *Sistrum angulatum* Sowerby, 1903)

Type locality. *E. parva*: Paumotus (Tuamotu Archipelago); *M. cernohorskyi*: French Polynesia, Tuamotu Archipelago, Mururoa Atoll, 22°00' S, 140°00' W.

Type material. *E. parva*: lectotype ANSP 34542, selected by Johnson (1994); *M. cernohorskyi*: holotype MNHN.

Distribution. Tuamotu Archipelago.

Description. Shell small, up to 6.3 mm in length, biconical, stout, weakly spinose. Spire high with 3-3.5 protoconch whorls, and up to 4 shouldered teleoconch whorls. Suture impressed. Protoconch conical, acute, smooth, glossy. Terminal varix strong, curved, of sinusigera type.

Last teleoconch whorl with 8-10 axial ribs crossed with spiral cords (IP, P1-P5 and s2). IP broad, forming small nodules at intersection with axial sculpture. P1-P5 approximately similar in size; P1 weakly larger. Intersection of axial ribs and spiral cords giving rise to small, blunt spinelets. P1 weakly longer; P5 shortest.

Aperture narrow, ovate. Columellar lip narrow with 2 or 3 weak knobs abapically; rim adherent. Anal notch broad, deep. Outer lip weakly erect with 5 denticles within (ID, D1-D4). ID weak, D1 strongest, D2-D4 almost of similar strength.

Siphonal canal short, straight, broadly open, with P6 and ADP.

Light orange, yellow-tan or tan with P1, P3, P5, and tip of siphonal canal dark brown. IP, P2, s2 and P4 light orange. Aperture glossy white with dark brown, narrow bands inside.

Radula and operculum unknown.

Remarks. *Morula angulata* was confused with *M. cernohorskyi* by Cernohorsky (1987) both, however have very different axial and spiral ornamentation (see descriptions) and color. See also Table 1.

Morula (Morula) echinata (Reeve, 1845)

Figs 4, 27-31; Text Fig. B

Ricinula echinata Reeve, 1846: pl.6, fig. 54
Engina monilifera Pease, 1860: 142

Morula echinata – Cernohorsky, 1975: 207 (remarks), figs 72 & 73; 1978: 69, pl. 20, fig. 2; Drivas & Jay, 1988: 72, pl. 21, fig. 14; Tröndle & Houart, 1992: 100, fig. 77; Okutani, 2000: 391, pl. 194, fig. 137.
Morula parva – Cernohorsky, 1969: 309, pl. 49, fig. 21; 1972: 128, pl. 36, fig. 4 (not *Engina parva* Reeve, 1846).
Morula benedictus – Kay, 1979: 246, fig. 87 (k) (not *Murex benedictus* Melvill & Standen, 1895).
Morula funiculata – Kay, 1979: 247, fig. 87 (l) (not *Ricinula funiculata* Reeve, 1846).
Morula gemmulifera –Kaicher, 1980: card 2484[2]

Type locality. *R. echinata*: unknown; *E. monilifera*: Sandwich Islands (Hawaiian Archipelago).

Type material. *R. echinata*: holotype BM(NH) 1968456; *E. monilifera*: lectotype BM(NH) 1961460, selected by Kay (1965).

Distribution. Throughout the Indo-Pacific, from Tulear (Madagascar) to the Hawaiian Archipelago. Specimens are known also from the Holocene of Hurghada, Egypt (coll. B. Landau).

Description. Shell small, up to 9 mm in length at maturity, lanceolate, spinose. Spire high, acute, with 3.5 protoconch whorls and up to 5 convex, spinose teleoconch whorls. Suture weakly adpressed.

Protoconch large, conical, acute; whorls smooth. Terminal varix strongly curved, of sinusigera type.

Last teleoconch whorl with 7 or 8 axial ribs crossed with 6 spiral cords (IP, P1-P5). Small, acute spines occuring at intersection of spiral and axial sculpture. Spiral cords similar in size.

Aperture large, narrowly ovate. Columellar lip narrow with 2 or 3 narrow, elongate lirae within adapically. Rim adherent or weakly erect abapically. Outer lip weakly erect with 4 strong denticles within (D1-D4). Occasional presence of a low infrasutural denticle (ID).

Siphonal canal short, weakly dorsally curved at tip, broadly open, with P6 and ADP.

Creamy-white with orange coloured nodes on IP, at intersection of axial ribs; dark brown between each node. Spinelets in P1, P4, P5 and ADP, occasionally also in P2, orange. Dark brown between spinelets and between spiral cords. P3, or P2 and P3 white, forming a white spiral band.

Operculum dark brown with lateral nucleus in lower right. Radula with projecting, long central cusp, short lateral denticle and long lateral cusp on each side.

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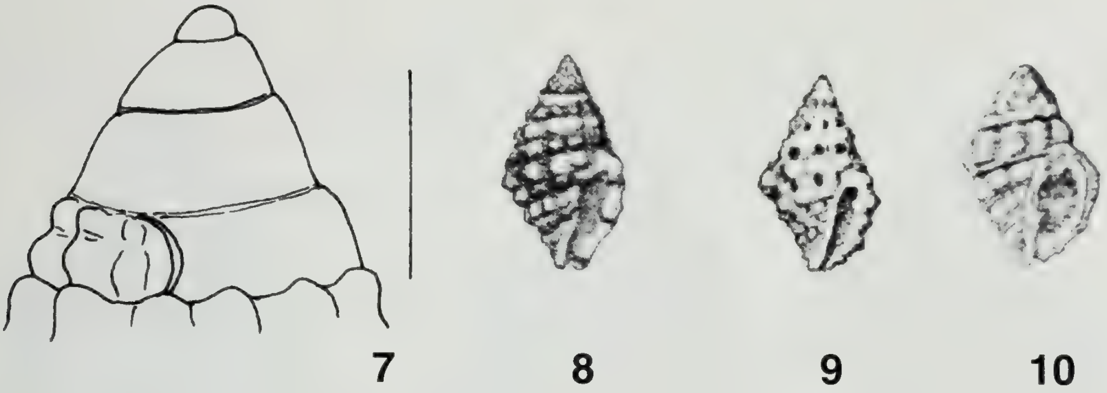
[2] That name was not reported by Kay & Clench (1975)



Figures 7-10
7. *Morula parva* (Reeve, 1846), protoconch (scale bar 0.5 mm); **8.** *M. nodicostata* (Pease, 1868), original illustration from Pease (1868); **9.** *M. variabilis* (Pease, 1868), original illustration from Pease (1868); **10.** *M. purpureocincta* (Preston, 1909) original illustration from Preston (1909)

Occasionally low marginal denticles between lateral and marginal cusps.

Remarks. *Morula echinata* is apparently very common, occuring throughout the Indo-Pacific. Its distinctive color and the low, acute spines and rounded spiral cords of approximately similar size distinguish it from any other *Morula* species. See also Table 1.

Morula (Morula) nodicostata (Pease, 1868)

Figs 8, 14-17

Engina nodicostata Pease, 1868: 274, pl. 23, fig.8
Morula parvissima Cernohorsky, 1987: 99, figs. 14-15 (n.n. for parva Pease, not Reeve)

Engina nodicostata –JOHNSON, 1994: 18, pl. 23, fig. 8 (lectotype).
Morula parva –CERNOHORSKY, 1978: 77, figs 24, 25; SPRINGSTEEN & LEOBRERA, 1986: 140, pl. 38, fig. 7 (not *Engina parva* Reeve, 1846).
Morula parvissima –TRÖNDLE & HOUART, 1992: 103, fig. 78; OKUTANI, 2000: 391, pl. 194, fig. 138.
NOT *Morula nodicostata* – CERNOHORSKY, 1969: 399, pl. 49, fig. 20, text fig. 17; CERNOHORSKY, 1972: 127, pl. 36, fig. 5; WELLS et al, 1990: 44, pl. 21, fig. 144; WILSON, 1994: 44, text fig [= *Morula purpureocincta* (Preston, 1909)]; TRÖNDLE & HOUART, 1992: 101 (in part), figs 84-86 [= *Morula variabilis* (Pease, 1868)]; TRÖNDLE & HOUART, 1992: 101 (in part), fig. 83 (= *Morula peasei* n.sp.); OKUTANI, 2000: 393, pl. 195, fig. 142 (= unknown species).

Type locality. *E. nodicostata*: Paumotus (Tuamotu Archipelago); *M. parvissima*: Mururoa Atoll, Tuamotu Archipelago.

Type material. *E. nodicostata*: lectotype MCZ 260614, selected by Johnson (1994); *M. parvissima*: holotype AIM TM-1374 (not examined).

Distribution. Society and Tuamotu Archipelago.

Description. Shell small, up to 6.2 mm in length at maturity, slender, lanceolate, heavy, tuberculate. Spire high with 4-4 ¾ protoconch whorls and up to 4 weakly convex, nodose, teleoconch whorls. Suture impressed.
Protoconch large, conical, acute; whorls smooth, glossy. terminal varix heavy, strongly curved, of sinusigera type, partially covered with first teleoconch whorl in all examined specimens.
Last teleoconch whorl with 9 broad, rounded axial ribs crossed with 6 broad, rounded spiral cords (IP, P1-P5), forming broad knobs at intersection of axial ribs and spiral cords. IP broadest, P1-P4 almost similar in size and strength; P5 lower and narrower. In addtition shell covered with numerous spiral lirae.
Aperture large, narrow, ovate. Columellar lip narrow, with 1 weak knob abapically and small parietal tooth adapically. Lip completely adherent. Anal notch broad, deep. Outer lip with 4 strong denticles within: D1-D2 broad, strong; D3 and D4 lower, narrower, elongate within the aperture. Occasional presence of weak ID.
Siphonal canal very short, straight, broadly open, smooth except spiral lirae.
White with dark brown or black P1, P3 and P5. P2 and P4 white. Protoconch glossy white with narrow adapical brown band on penultimate and last whorls. Aperture white with dark brown blotch on adapical extremity of columellar lip and brown bands within.

Operculum and radula unknown.

Remarks. This is the species described as *Morula parvissima* by Cernohorsky (1987: 99) due to a misidentification of *Morula nodicostata* (Pease, 1868). See also Table 1.

Morula (Morula) parva (Reeve, 1846)

Figs 5, 7, 44-47

Ricinula parva Reeve, 1846: pl.6, fig. 43

Morula parva –CERNOHORSKY, 1978: 78, fig. 26; HOUART, 1996: 388, figs 22-25.
NOT *Morula parva* –CERNOHORSKY, 1969: 309, pl. 49, fig. 21; 1972: 128, pl. 36, fig. 4 [= *Morula echinata* (Reeve, 1846)]; SPRINGSTEEN & LEOBRERA, 1986: 140, pl. 38, fig. 7 [= *Morula nodicostata* (Pease, 1868)].

Type locality. Luzon, Philippines.

Type material. 2 syntypes BM(NH) 1968471, here selected as lectotype and paralectotype.

Distribution. Okinawa (Ishigaki Island), Philippine Islands (Cebu and Luzon) and Ambon, Indonesia.

Description. Shell small, up to 9.4 mm in length at maturity, lanceolate, heavy, nodose. Spire high with 3 ½+ whorls (first whorl broken in examined specimens), up to 5 broad, convex, nodose teleoconch whorls. Suture impressed.
Protoconch large, conical; whorls glossy, with a narrow single keel adapically, otherwise smooth. Terminal varix strongly curved, of sinusigera type.
Last teleoconch whorl with 8 rounded, broad axial ribs, crossed by IP, P1-P5. P1 duplicated from penultimate whorl; other spiral cords of approximately same size, P5 weakly narrower.
Aperture narrowly ovate. Columellar lip weakly erect, smooth or with a small denticle abapically. Outer lip with strong denticles within: D1 broad and strong, D2-D4 decreasing in strength abapically.
Siphonal canal short, straight, broadly open, with P6.
White or creamy-white with colored nodes at intersection of axial and spiral sculpture. IP with bright orange nodes, P1 with blackish-brown nodes, P2 with orange, P3 with blackish-brown, P4 with orange, P5 with blackish-brown, P6 with orange. Aperture white.
Radula with short central cusp, short, narrow, lateral denticle and long lateral cusp at each side. Presence of low, serrated marginal denticles between lateral and marginal cusps.

Remarks. Besides the differences in shell morphology and color, *M. parva* also differs from all other *Morula* species of this group in having a splitted P1 on penultimate and last whorls. See also Table 2.

Morula (Morula) peasei n.sp.

Figs 32-34

Type material. Arue, Tahiti, Society Archipelago, French Polynesia, holotype and 1 paratype MNHN, 7 paratypes J. Tröndlé.

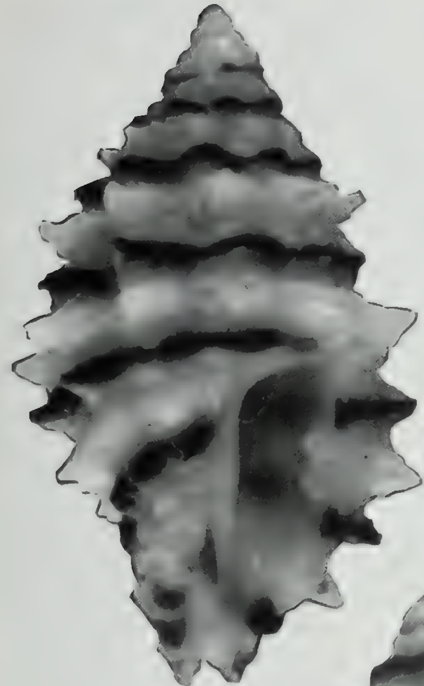
Other material. Papara, Tahiti, 2 sp., coll. R. Houart; Pueu, Tahiti, 1 sp., coll. R. Gourguet; Tubuaï Island, 1 sp. coll. R. Houart.

Type locality. Arue, Tahiti, Society Archipelago, French Polynesia, on reef flats.

Distribution. French Polynesia, Tubuaï and Tahiti, Society Archipelago, on reef flats.

Description. Shell small, up to 8.9 mm in length (holotype), lanceolate, heavy, nodose. Spire high with 4 protoconch whorls and up to 4+ broad, convex, weakly shouldered, nodose teleoconch whorls. Suture adpressed.
Protoconch large, conical, smooth. terminal varix raised, strongly curved, of sinusigera type, partially covered by first teleoconch whorl.
Axial sculpture of teleoconch whorls consisting of high, strong, broad, rounded ribs: 11 on first whorl, 9 or 10 on second, 10 or 11 on third, 9 on fourth and 8 on last whorl. Spiral sculpture of low, broad cords: first to penultimate whorls with IP and P1 visible; last whorl with IP, P1, P2-P4. Shell covered with additional low spiral threads.
Aperture broadly ovate. Columellar lip narrow, smooth or with a single weak knob abapically. Rim completely adherent. Small parietal node adapically. Anal notch broad, deep. Outer lip with 6 weak denticles within: ID, D1, D2 (probably splitted), D3 (probably splitted). ID low, D1 weakly stronger than other denticles. Siphonal canal very short, straight, broadly open.
Dark brown with white knobs at intersection of spiral and axial sculpture. Aperture light mauve.
Operculum and radula unknown.

Figures 11-17
11-13. *Morula albanigra* n.sp.
11-12. Guam, lagoon, 1.5-2 m, among silty dead coral, holotype IRSNB IG 29532, 7.5 mm; 13. Guam, Glass breakwall, near Mouth of Apra Harbor, 6m, under rubble, paratype coll. R. Houart, 6.9 mm.
14-17. *M. nodicostata* (Pease, 1868)
14-15. French Polynesia, Paumotus, Lectotype MCZ 260614, 6 mm; 16-17. French Polynesia, Tahiti, coll. R. Houart, 6.4 mm.



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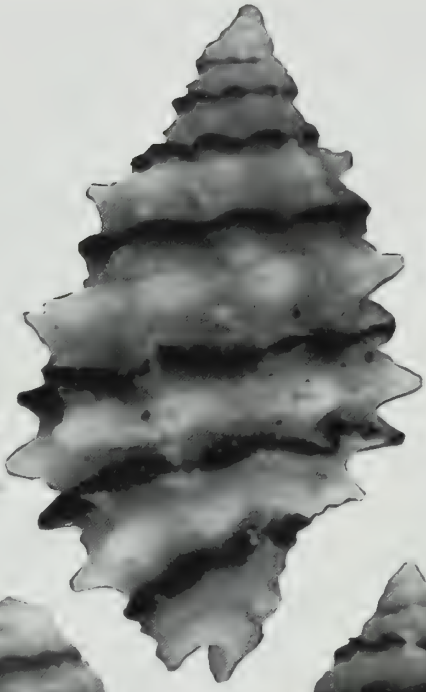

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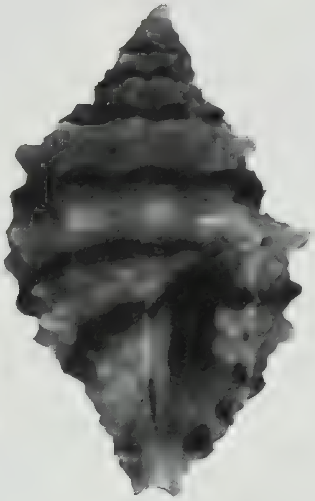

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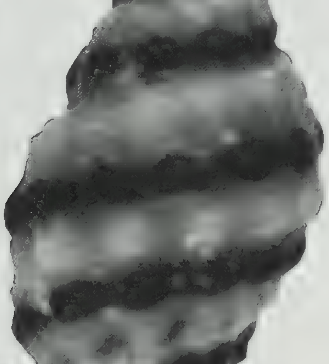

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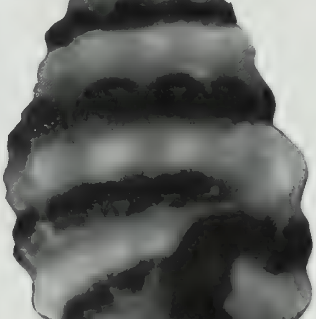

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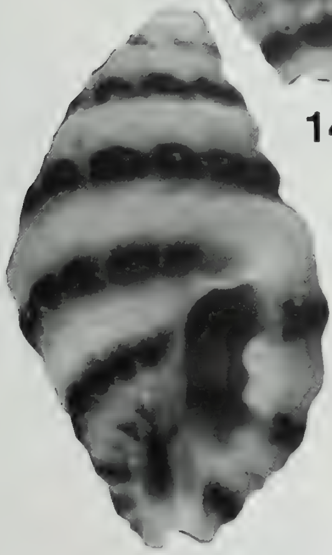

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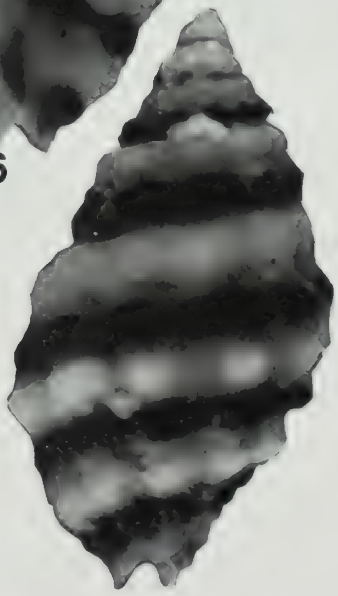

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Remarks. *Morula peasei* n.sp. differs from *M. variabilis* (Pease) in being more weakly shouldered, in having a higher spire, more similar-sized spiral cords, a broader aperture with smaller (probably split) denticles within, and an abapically broader columellar lip. The shell also lacks orange colored nodes and has a lighter colored aperture.

The lack of growth series, from very young specimens to adults have not allowed me to be more precise as to the position of the spiral cords of the last whorl, and about the internal denticles of the aperture. A redescription will be necessary when such a material becomes available. See also Table 2.

Etymology. Named after William Harper Pease.

Morula (Morula) purpureocincta (Preston, 1909)
Figs 3, 10, 41-43

Engina purpureocincta Preston, 1909: 136, pl. 22, fig. 13

Morula purpureocincta –CERNOHORSKY, 1975: 209 (remarks), fig. 75 (holotype); Okutani, 2000: 391, pl. 194, fig. 139.
Morula nodicostata –CERNOHORSKY, 1969: 399, pl. 49, fig. 20, text fig. 17; CERNOHORSKY, 1972: 127, pl. 36, fig. 5; FUJIOKA, 1985: 248, pl. 4, figs 39-40 (radula); WELLS et al, 1990: 44, pl. 21, fig. 144; WILSON, 1994: 44, text fig; HOUART, 1996: 388 (not *Engina nodicostata* Pease, 1868).

Type locality. Ceylon (Sri Lanka).

Type material. Holotype BM(NH) 1915.1.6.28.

Distribution. Indo-West Pacific. Sri Lanka, Indonesia, northern Japan, Queensland (Australia) and New Caledonia.

Description. Shell small, up to 10.1 mm in length, heavy, broadly biconical, nodose. Spire high with 3+ protoconch whorls and up to 5 broad, strongly nodose teleoconch whorls. Suture impressed. Protoconch conical, acute; number of whorls unknown, covered with thick chalcky layer in the unique specimen examined with intact protoconch.

Last whorl with 6-7 broad axial ribs crossed by 3 broad cords, probably P1-P2, P3-P4, P5-P6 merged (ontogeny unknown). Shell also covered by numerous rounded, smooth threads on and between spiral cords. Infrasutural sculpture present but indeterminate.

Aperture large, broadly ovate; columellar lip narrow with 1-3 weak knobs adapically. Rim completely adherent. Anal notch broad, deep. Outer lip weakly erect with 6 weak, narrow denticles within: ID weak, D1 largest, D2-D5 weak and lower, approximately similar in size.

Siphonal canal very short, straight, broadly open, probably with ADP.

Milky-white with narrow broan band between spiral cords, often with rough, thick chalcky layer. Aperture pale lavender.

Radula with long central cusp, short, narrow, lateral denticle and long lateral cusp at each side. Presence of low, serrated marginal denticles between lateral and marginal cusps (Fujioka, 1985).

Remarks. The careful observation of a serie of specimens has led me to the conclusion that the primary spiral cords of the last teleoconch whorls (P1-P6) are merged in pairs (P1-P2, P3-P4, P5-P6). This particularity was not observed in any other species of the studied group. See also Table 2.

Morula (Morula) rodgersi Houart, 2000
Figs 38-40

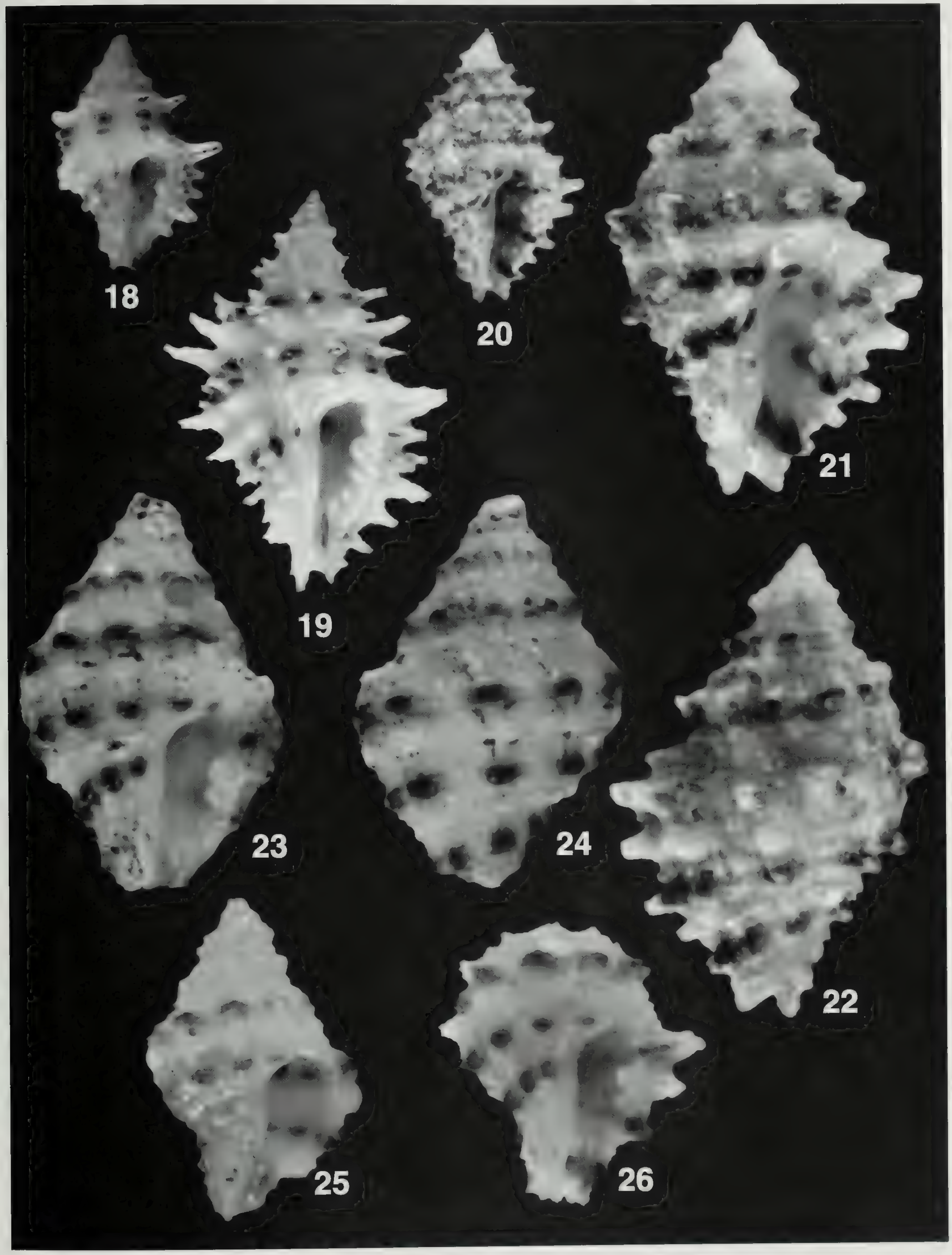
Morula rodgersi Houart, 2000: 101, figs 1-3

Type locality. Guam, Piti Lagoon, 6-9 m, among rocks

Type material. Holotype MNHN.

Distribution. Western Guam, Agat Bay and Piti Lagoon, 6-9 m. Two specimens have also been seen from South Mozambique, trapped alive in 70-120 m, near Macanza (coll. Manuel Amorim). Two other specimens have been collected dead in Tahiti (M. Boutet).

Figures 18-26
18-19. *Morula angulata* (Sowerby, 1893)
18. Mauritius, holotype BM(NH) 1902.11.26.72, 6.8 mm; 19. Guam, Piti Lagoon, among silty dead coral, 1.5-4.6 m, coll. R. Houart, 7.6 mm.
20-26. *Morula cernohorskyi* Houart & Tröndlé, 1997
20. French Polynesia, Tuamotu Archipelago, Mururoa Atoll, holotype MNHN, 6 mm; 21-22. French Polynesia, Tuamotu Archipelago, Mururoa Atoll, beach sand, paratype coll. R. Houart, 5.8 mm; 23-24. Lectotype of *Engina parva* Pease, 1868, French Polynesia, Paumotus (Tuamotu), ANSP 34542, 5.8 mm; 25. Paralectotype of *Engina parva* Pease, 1868, French Polynesia, Paumotus (Tuamotu), MCZ 049995, 4.7 mm; 26. Paralectotype of *Engina parva* Pease, 1868, French Polynesia, Paumotus (Tuamotu), ANSP 34542, 3.9 mm (damaged).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Description. Shell small, up to 12 mm in length at maturity, biconical, spinose. Spire high, acute, with 3.25 - 3.5 protoconch whorls and up to 6 broad, strongly shouldered, spinose teleoconch whorls. Suture strongly adpressed. Protoconch small, conical, acute, with a narrow keel abapically on penultimate and last whorl. On last whorl, keel overlapped by first teleoconch whorl. Terminal varix heavy, high, of sinusigera type.

Axial sculpture of teleoconch whorls consisting of low, broad varices, each with short spines. Other axial sculpture of numerous growth lamellae. Last teleoconch whorl with 9-11 axial ribs crossed with 4 low, broad, squamous spiral cords (P1-P4) and numerous threads on and between cords. IP starting only from penultimate axial rib of last whorl. Short, acute, flattened, open spines produced at intersection of spiral cords and axial ribs.

Aperture small, narrow, ovate. Columellar lip narrow, flaring, with 3 or 4 elongate, weak knobs abapically; rim partially erect, adherent at adapical extremity. Weak parietal tooth. Anal notch broad, deep. Outer lip erect, weakly crenulate, with strong denticles within : ID low, D1-D3 high, gradually smaller and lower abapically. D1 strongest, D3 splitted. Siphonal canal short, narrow, straight, weakly dorsally bent at tip, broadly open, with P6, ADP and many threads : 6 or 7 threads between P4 and P6; 4 or 5 between P6 and ADP.

Creamy-white or pale tan, occasionally with small brown blotches at base of spines. Aperture white.

Operculum and radula not studied.

Remarks. *M. angulata* has longer, broader spines, narrower spiral threads, narrower and straighter shoulder, and five cords (P1-P5) on the convex part of the last teleoconch whorl. *M. echinata* is comparatively smaller with shorter spines, five similar cords on the convex part of the last teleoconch whorl, and one broad cord on shoulder (IP) with orange coloured nodules; the spiral threads are also more numerous and narrower. *M. cernohorskyi* has four spiral cords on the convex part of the last teleoconch whorl, fewer threads, and one broad, light orange coloured cord on shoulder (IP) with broad nodules. As for *M. angulata* which is known from two very distant localities (eastern Indian Ocean and Central Pacific), it seems likely that *M. rodgersi* occurs in other parts of the Indo-Pacific. See also Table 2.

***Morula (Morula) variabilis* (Pease, 1868)**

Figs 9, 35-37

Engina variabilis Pease, 1868: 275, pl. 23, fig. 9

Morula variabilis –CERNOHORSKY, 1987: 99, figs 12-13 (lectotype).
Engina variabilis –JOHNSON, 1994: 27, pl. 7, fig. 5 (lectotype).
Morula nodicostata –TRÖNDLE & HOUART, 1992: 101 (in part), figs 84-86 (not *Engina nodicostata* Pease, 1868).

Type locality. Paumotus (Tuamotu Archipelago).

Type material. Lectotype MCZ 260618, selected by Cernohorsky (1987).

Distribution. Tuamotu Archipelago and Tubuaï.

Description. Shell small, up to 8.5 mm in length at maturity, biconical, heavy, nodose. Spire high with 4 protoconch whorls and up to 4 broad, shouldered, nodose teleoconch whorls. Suture adpressed.

Protoconch large, conical, with a narrow, single keel abapically, otherwise smooth. Terminal varix erect, strongly curved, of sinusigera type.

Last teleoconch whorl with 8 rounded axial ribds crossed by IP, P1-P6 (ontogeny unknown). Shell covered by narrow, low, rounded, additional threads. IP low on penultimate and last whorls, almost flat in some specimens, P1 broad, high, strong, followed by narrow P2, broad, high P3, narrow P4, broad P5, narrow s5, broad P6. P1-P3 and P5 decreasing in strength abapically.

Aperture narrow, ovate. Columellar lip narrow, smooth or with 1 or 2 low, narrow nodes abapically. Rim completely adherent. Small parietal tooth adapically. Anal notch very broad, deep. Outer lip with strong denticles within: ID weak, D1 strong, high, D2-D4 smaller, almost similar in size. Siphonal canal very short, straight, broadly open, with P6.

Figures 27-36

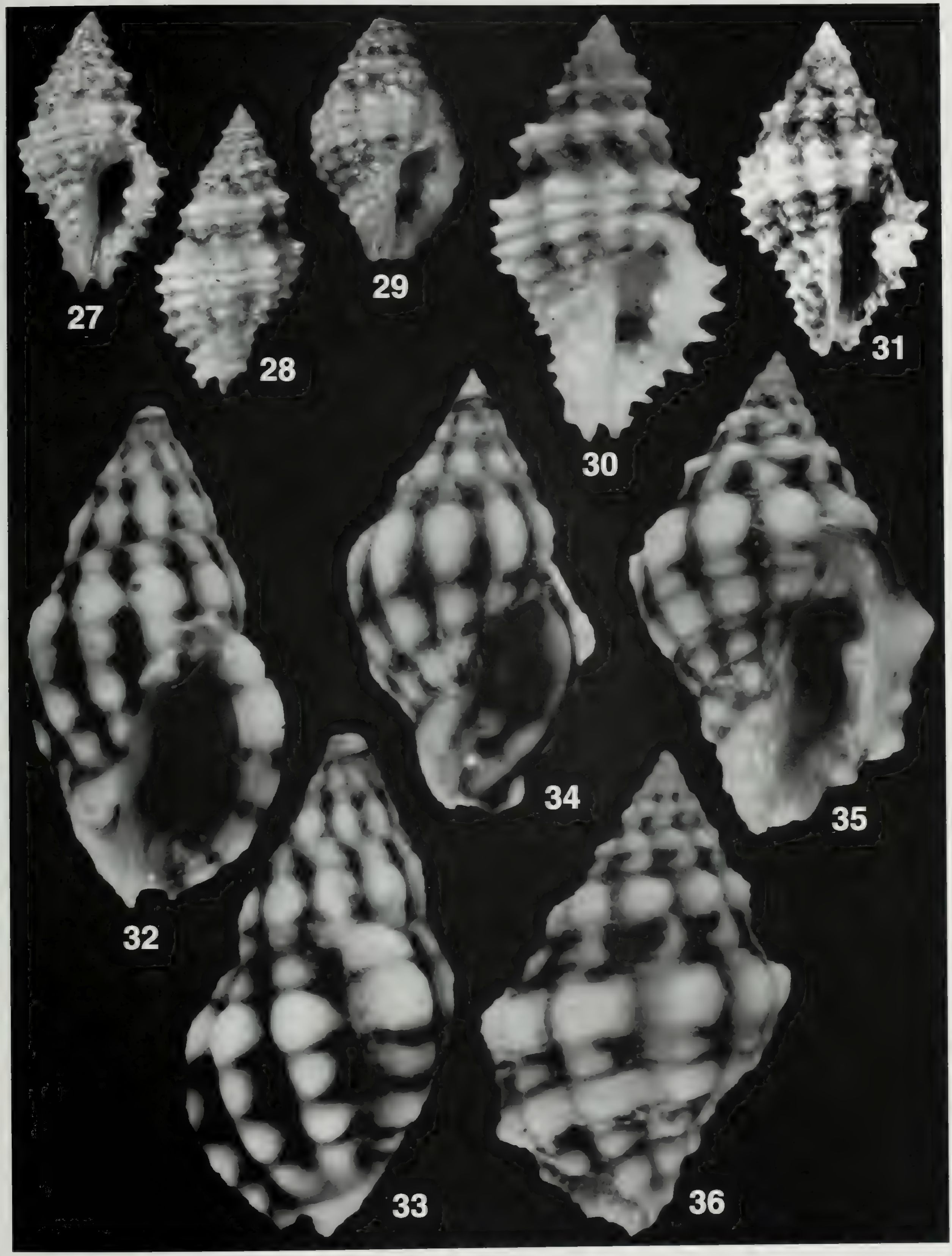
27-31. *Morula echinata* (Reeve, 1846)

27-28. Holotype BM(NH) 1968456, 9 mm, photo courtesy E.H. Vokes; 29. Lectotype of *Engina monilifera* Pease, 1860. Sandwich Islands (Hawaii), BM(NH) 1961460, 7.4 mm, photo courtesy E.H. Vokes; 30. Guam, Piti Lagoon, among dead coral, 3.7 m, coll. R. Houart, 8.2 mm; 31. French Polynesia, Tahiti, coll. R. Houart, 7.1 mm.

32-34. *M. peasei* Houart, n.sp. French Polynesia, Tahiti, Arue.

32-33. Holotype MNHN, 8.9 mm; 34. Paratype coll. J. Tröndlé, 6.9 mm.

35-36. *M. variabilis* (Pease, 1868). French Polynesia, Paumotus (Tuamotu), lectotype MCZ 260618, 6.9 mm.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Shell white, black and orange as follows: nodes resulting from crossing of P1, P3 and P5 with axial ribs white; nodes of IP, P2 and P4 orange; interspaces black. Aperture entirely mauve. Operculum and radula unknown.

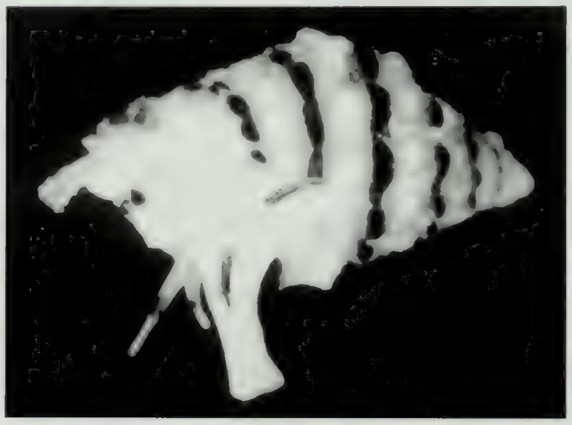
Characters	***M. albanigra***	***M. angulata***	***M. cernohorskyi***	***M. echinata***	***M. nodicostata***
Maximum length	7.5 mm	8.5 mm	6.3 mm	9 mm	6.2 mm
Number and size of spiral cords of last whorl including siphonal canal	IP, P1-P6. IP-P1-P3-P4 broader.	IP, P1-P6 and ADP. IP broad, P1 and P2 small, P3 broad, P4 and P5 decreasing in strength abapically	IP, P1-P6 and s2, and ADP. IP broad, forming small nodules at intersection with axial sculpture. P1-P5 similar in size; P1 slightly larger.	IP, P1-P6 and ADP, similar in size and strength	IP, P1-P5. IP broadest, P1-P4 similar in size and strength; P5 lower and narrower. Covered with numerous spiral lirae
Number of axial ribs of last whorl	7	6	8-10	7 or 8	9
Form of spiral cords	sharp	sharp	sharp	sharp	rounded
Spines/nodes	Small, acute, narrowly open spinelets where axial ribs cross spiral cords.	IP forming longest spine at intersection with axial ribs, P1 and P2 short, P3 long, P4 and P5 short	Intersection of axial ribs and spiral cords giving rise to small, blunt spinelets. P1 weakly longer; P5 shortest	Small, acute spines occuring at intersection of spiral and axial sculpture	broad knobs at intersection of spiral and axial sculpture
Columellar lip	smooth or with a single, weak know abapically; small parietal node adapically	with 2 elongate, strong knobs abapically	with 2 or 3 weak knobs abapically	with 2 or 3 narrow, elongate lirae within adapically	with 1 weak knob abapically and small parietal tooth adapically
Denticles of the inner side of the aperture	5 denticles within: DI very low, small, D1 and D2 broad, high, D3 and D4 small, low; D1 largest	5 strong denticles within: ID, D1-D4. D1 strongest, D2-D4 of approximately similar size, D2 slightly stronger	5 denticles within (ID, D1-D4). ID weak, D1 strongest, D2-D4 of similar strength	4 strong denticles within (D1-D4). Occasional presence of a low infrasutural denticle (ID)	4 strong denticles within: D1-D2 broad, strong; D3 and D4 lower, narrower, elongate within the aperture. Occasional presence of weak ID
Color	White with dark brown band on top of P1, P3 and P5 and small dark brown blotches on tip of siphonal canal	Milky-white with dark brown, almost black blotches on P1 on penultimate whorl; on P1 and P2 on last whorl, and on P6. Earlier whorls unformly milky-white. Aperture white	Light orange, yellow-tan or tan with P1, P3 and P5, and tip of siphonal canal dark brown. IP, P2, s2 and P4 light orange. Aperture glossy white with dark brown, narrow bands inside	Creamy-white with orange coloured nodes on IP, at intersection of axial ribs; dark brown between each node. Spinelets in P1, P4, P5 and P6, occasionally also in P2, orange. Dark brown between these spinelets and between spiral cords. P3, or P2 and P3 white, forming a white spiral band.	White with dark brown or black P1, P3 and P5. P2 and P4 white. Protoconch glossy white with narrow adapical brown band on penultimate and last whorls. Aperture white with dark brown blotch on adapical extremity of columellar lip and brown bands within
Distribution	Central West Guam, living at 1.5-7.5 m and Okinawa (Ishigaki Id)	Mauritius, Society and Tuamotu Archipelagos, Guam	Tuamotu Archipelago	Indo-Pacific, from Tulear (Madagascar) to the Hawaiian Archipelago	Society and Tuamotu Archipelago

Table 1. Comparisons of *Morula* species

Characters	***M. parva***	***M. peasei***	***M. purpureocincta***	***M. rodgersi***	***M. variabilis***
Maximum length	9.4 mm	8.9 mm	10.1 mm	12 mm	8.5 mm
Number of spiral cords of last whorl including siphonal canal	IP, P1-P6. P1 duplicated from penultimate whorl; other spiral cords of approximately same size, P5 weakly narrower.	IP, P1, P2-P4. Shell covered with additional low spiral threads	with 3 broad cords, probably P1-P2, P3-P4, P5-P6 fused (ontogeny unknown), ADP. Shell also covered by numerous rounded, smooth threads on and between spiral cords. Infrasutural sculpture present but indeterminate	with 4 low, broad, squamous spiral cords (P1-P4) and numerous threads on and between cords, P6 and ADP. IP starting only from penultimate axial rib of last whorl.	IP, P1-P6 (ontogeny unknown). Shell covered by narrow, low, rounded, additional threads. IP low on penultimate and last whorls, almost flat in some specimens, P1 broad, high, strong, followed by narrow P2, broad, high P3, narrow P4, broad P5, narrow s5, broad P6. P1-P3 and P5 decreasing in strength abapically
Number of axial ribs of last whorl	8	8	6 or 7	9-11	8
Form of spiral cords	rounded	rounded	rounded	sharp	rounded
Spines/nodes	low nodes	low nodes	high nodes	Short, acute, flattened, open spines produced at intersection of spiral cords and axial ribs	broad nodes
Columellar lip	smooth or with a small denticle abapically	smooth or with a single weak knob abapically. Small parietal node adapically	with 1-3 weak knobs adapically	with 3 or 4 elongate, weak knobs abapically. Weak parietal tooth	smooth or with 1 or 2 low, narrow nodes abapically. Small parietal tooth adapically
Denticles of the inner side of the aperture	strong denticles within: D1 broad and strong, D2-D4 decreasing in strength abapically	6 weak denticles within: ID, D1, D2 (probably split), D3 (probably split). ID low, D1 weakly stronger than other denticles	6 weak, narrow denticles within: ID weak, D1 largest, D2-D5 weak and lower, similar in size	strong denticles within : ID low, D1-D3 high, gradually shrinking abapically. D1 strongest, D3 split	strong denticles within: ID weak, D1 strong, high, D2-D4 smaller, almost similar in size
Color	White or creamy-white with colored nodes at intersection of axial and spiral sculpture. IP with bright orange nodes, P1 with blackish-brown nodes, P2 with orange, P3 with blackish-brown, P4 with orange, P5 with blackish-brown, P6 with orange. Aperture white	Dark brown with white knobs at intersection of spiral and axial sculpture. Aperture light mauve	Milky-white with narrow broan band between spiral cords, often with rough, thick chalcky layer. Aperture pale lavender	Creamy-white or pale tan, occasionally with small brown blotches at base of spines. Aperture white	Shell white, black and orange as follows: nodes resuklting from crossing of P1, P3 and P5 with axial ribs white; nodes of IP, P2 and P4 orange; interspaces black. Aperture entirely mauve
Distribution	Okinawa (Ishigaki Id), Philippine Islands (Cebu and Luzon) and Ambon, Indonesia	French Polynesia, Tubuaï and Tahiti, Society Archipelago, on reef flats	Indo-West Pacific. Sri Lanka, Indonesia, northern Japan, Queensland (Australia) and New Caledonia	South Mozambique, Western Guam, Agat Bay and Piti Lagoon, and Tahiti	Tuamotu Archipelago and Tubuaï

Table 2. Comparisons of *Morula* species

Remarks. It was difficult to determinate precisely the nomenclature of the spiral cords covering the last whorl without studying the ontogeny. However, a careful examination of several specimens and of the internal denticles of the outer apertural lip led to the present conclusion. The similar shell morphology and outline of *M. purpureocincta* has led to the misidentification of that species by several authors, including myself. *M. purpureocincta* differs in having a larger shell with different spiral sculpture, a broader aperture with smaller teeth. See also Table 2.



Text fig. C. *Morula albanigra* n.sp.
Shell: 7.1 x 4.3 mm. Photro courtesy H. Kubo

ACKNOWLEDGEMENTS

Thanks to H. Conley and F. Schroeder, Guam, for the gift of *Morula albanigra* n.sp. and other species, to H. Kubo, Okinawa Prefectural Fisheries Experimental Station, for the gift of specimens, for information, and for drawings and photographs, to J. Tröndlé, La Force, France, for the loan and gift of *Morula peasei* n.sp. and other material, and to M. Balleton and R. Gourguet, Tahiti for the loan of specimens. I am very grateful also to A.J. Baldinger, Museum of Comparative Zoology, Cambridge, Massachusetts, and to G. Rosenberg and M. Kitson, Academy of Natural Sciences, Philadelphia, for the loan of Pease's type material. This study wouldn't have been possible without their help and assistance. Thanks also to the staff of the malacology department of the Natural History Museum, London and of the Muséum national d'Histoire naturelle, Paris for their collaboration in many ways, to Anders Warén, Natural History Museum, Stockholm, Sweden, for radula preparation and SEM work, and to B. Marshall, Museum of New Zealand, Wellington, New Zealand, for his useful comments and corrections on the manuscript. D. Merle, Muséum national d'Histoire naturelle, Laboratoire de Paléontologie, Paris and C. Vilvens, Oupeye, Belgium, added some interesting comments and corrections on the final draft. Thanks to both.

Figures 37-47

37. *Morula variabilis* (Pease, 1868), French Polynesia,Tubuaï, coll. R. Houart, 7 mm.

38-40. *M. rodgersi* Houart, 2000

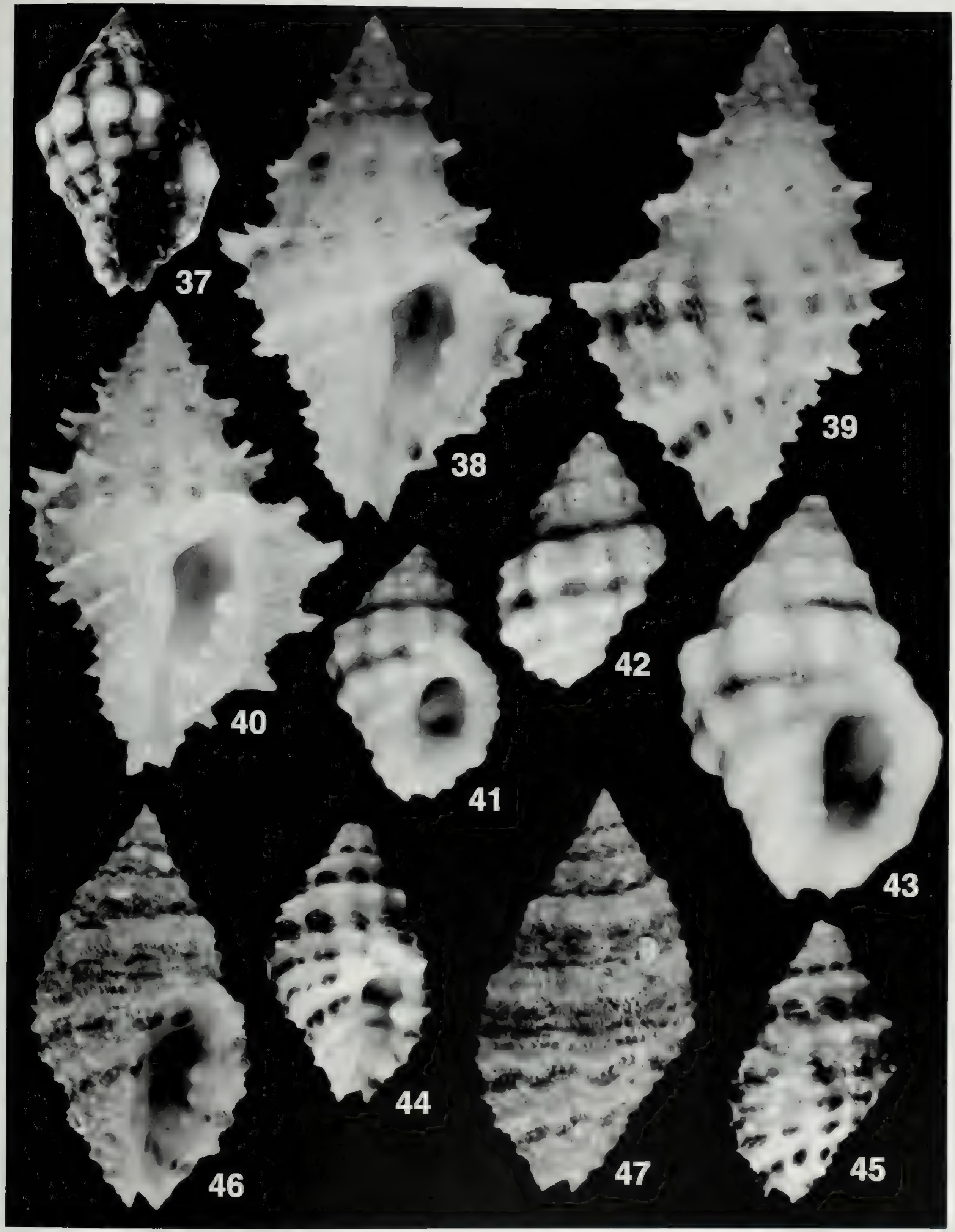
38-39. Guam, Piti Lagoon, among rocks, 6-9m, holotype MNHN, 11 mm; 40. Guam, North of Alutom Island, coll. R. Houart, 11.9 mm.

41-43. *M. purpureocincta* (Preston, 1909)

41-42. Ceylon (Sri Lanka), holotype BM(NH) 1915.1.6.28, 9.6 mm; 43. Thailand, Phuket, South of Patong Beach, coll. R. Houart, 10.1 mm.

44-47. *M. parva* (Reeve, 1846)

44-45. Philippine Isands, Luzon, lectotype BM(NH) 1968471, 8 mm; 46-47. Indonesia, Ambon, S.E. side of Pombo Island, littoral, under coral, RMNH, 8.5 mm.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Figures 48-57

48. *Morula uva* (Röding, 1798), Marquesas, coll. J. Tröndle, 24.9 mm; **49.** *M. aspera* (Lamarck, 1816), lectotype MHNG 1101/17/2, 20.5 mm, photo G. Ratton.

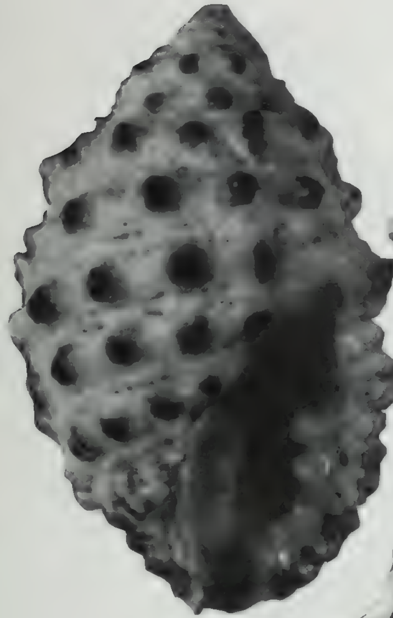
50-51. *M. rumphiusi* Houart, 1996

50. Indonesia, Ambon, East side of Laha, holotype RMNH 9443, 21.4 mm; 51. Mozambique Island, rocks in harbour, NM L1463, 18.4 mm; **52.** *M. funiculata* (Reeve, 1846), syntype BM(NH) 1968475, 17 mm.

53. *M. nodulosa* (C.B. Adams, 1845), Gabon, MNHN, 17 mm; **54.** *M. consanguinea* (Smith, 1890), Saint Helena, MNHN, 13.8 mm; **55.** *M. praecipua* Rehder, 1980, Easter Island, coll. R. Houart, 17 mm.

56-57. *M. oparense* (Melvill, 1912)

56. Rapa, syntype BM(NH) 1886.6.9.70-5, 14 mm; 57. Rapa, EPHE, 17.5 mm.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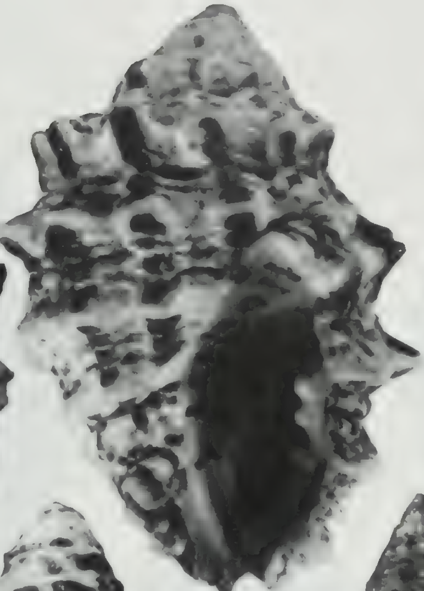
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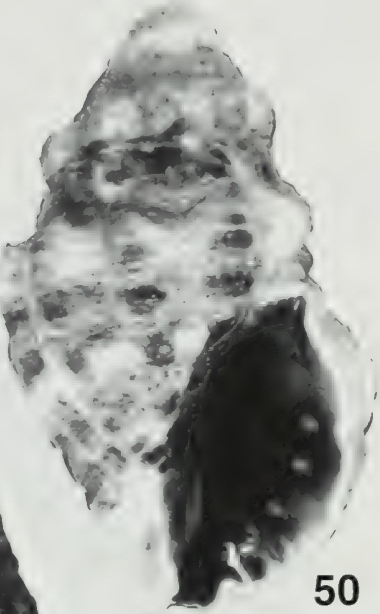
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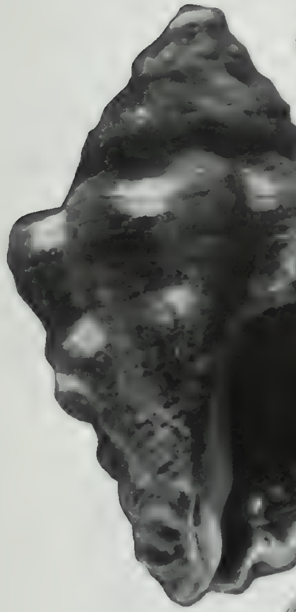
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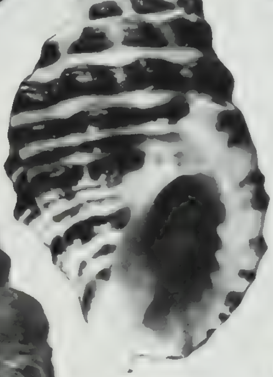
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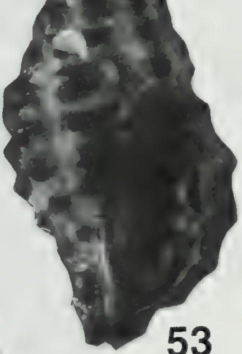
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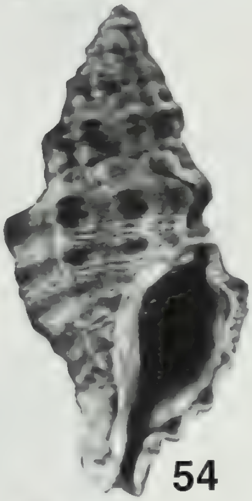
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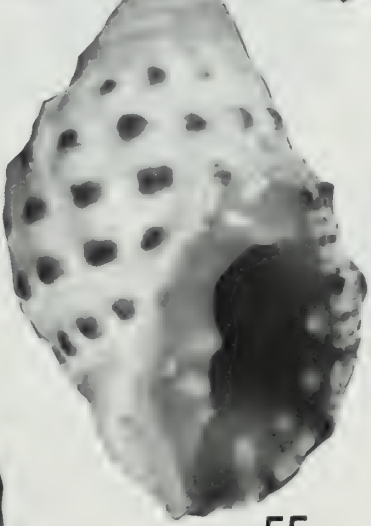
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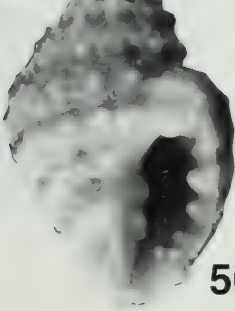
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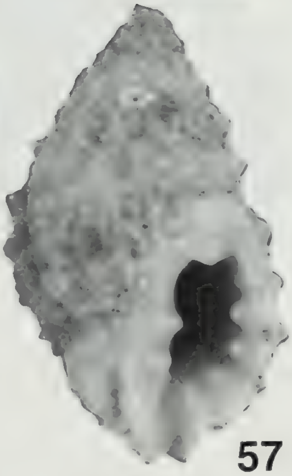
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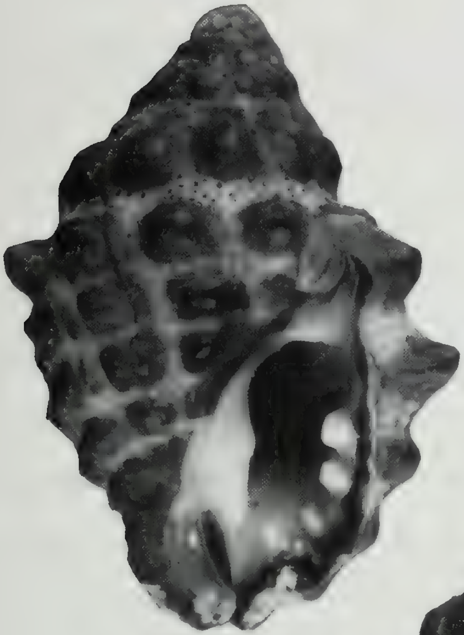
Figures 58-62
58. *Morula granulata* (Duclos, 1831), Tahiti, coll. R. Houart, 24.1 mm; **59.** *M. musiva* (Kiener, 1835), Singapore, East coast, Park Beach, coll. R. Houart, 27.2 mm; **60.** *M. marginalba* (Blainville, 1832), Australia, South Queensland, coll. R. Houart, 28.3 mm; **61.** *M. anaxares* (Kiener, 1835), South Africa, Natal, Durban, coll. R. Houart, 14.5 mm; **62.** *M. striata* (Pease, 1868), Tahiti, coll. R. Houart, 14.5 mm.



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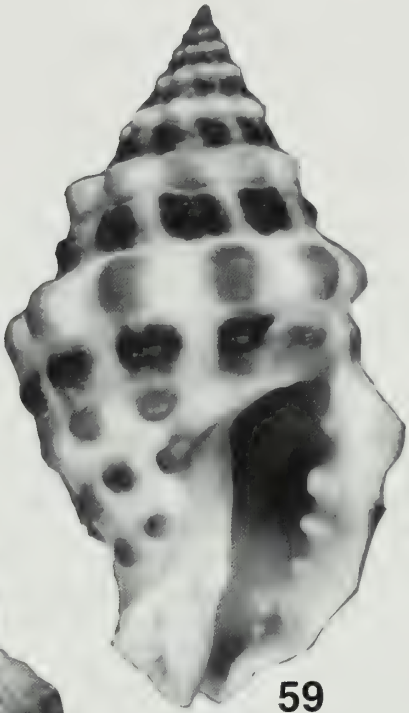

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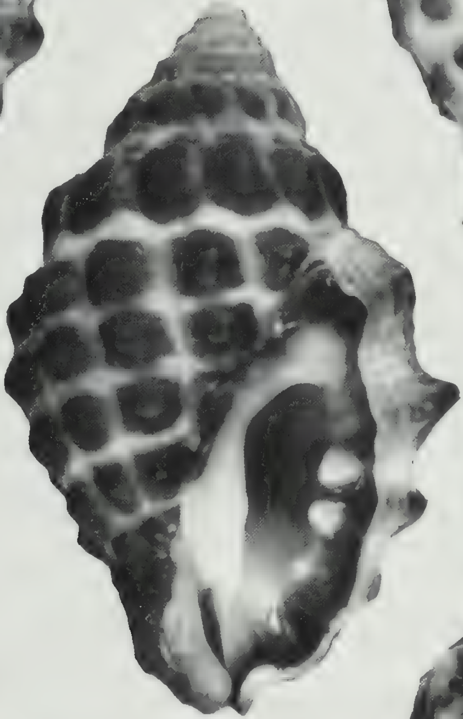

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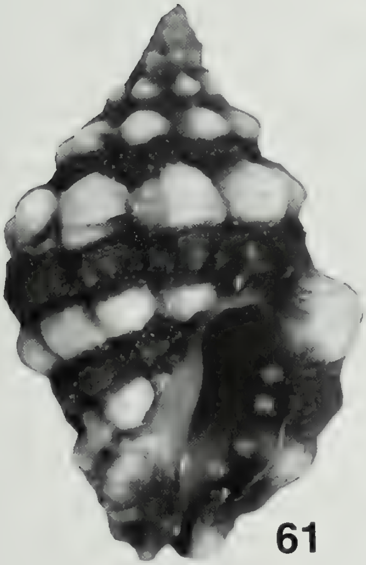

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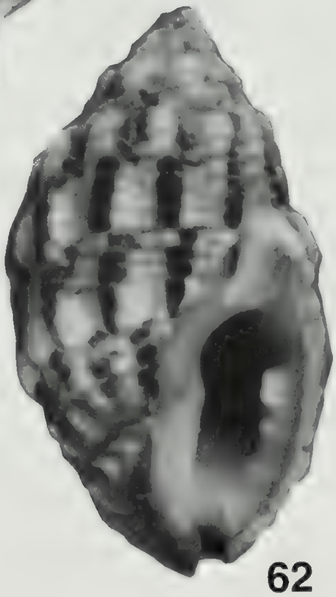

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A review of the genus *Serrata* Jousseaume, 1875 (Gastropoda : Marginellidae) from French Polynesia

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KEY WORDS. Marginellidae, *Serrata*, Central South Pacific, French Polynesia, new species, sibling species.

ABSTRACT. *Serrata translata* (Redfield, 1870) the single known French Polynesian species of the marginellid genus *Serrata* (Jousseaume, 1875) is studied in detail. Three new sibling species of *Serrata* are described, one from the Tuamotu Archipelago and two from the Society Islands. The sympatric occurrence of two sibling species is discussed. The animals are figured for the first time.

INTRODUCTION

A recent private expedition to the islands of the Central South Pacific by the second author has enabled extensive sampling of the microgastropod faunal assemblages of the littoral and infralittoral zones in five out of the forty or so atolls of the Tuamotu Archipelago and four of the Society Islands (Fig. 2). A detailed study of the encountered populations of living Marginellidae and Cystiscidae has realised a wealth of new information which the authors propose to present in a series of forthcoming papers, of which this is the first.

The molluscan faunas of the archipelagos of the Central South Pacific are mainly known from the extensive works of the American conchologist William Harper Pease (1824-1871), who between 1860 and 1872 described five hundred species of marine and terrestrial molluscs. These included a member of the genus *Serrata* (Jousseaume, 1875) as *Marginella pyriformis* Pease, 1868 from the Tuamotu Archipelago. Two years later, William Redfield corrected Pease's synonymy by renaming the species as *Marginella translata* (Redfield, 1870).

The Polynesian species presented in this paper share the characteristic features of *S. serrata* (Gaskoin, 1849) (Fig. 1), the type species of the genus, namely a gently curved, strongly denticulated labrum, and an aperture which is more or less evenly narrow along its length. The authors therefore propose to assign the new species described herein to *Serrata* Gaskoin "sensu stricto". Further discussion of the taxonomy of the "group *Serrata*" sensu Coovert & Coovert (1995) with its great diversity of radulae and shell morphologies falls beyond the scope of this paper.

In recent years the issue of the true identity of the French Polynesian representatives of the genus *Serrata* has become somewhat muddled, with the appearance of one, two and three banded specimens in collections. These shells (for example the single banded example in Lipe 1991, Pl. 7, p. 15, no. 26) are usually labelled as *Serrata translata* (Redfield, 1870). In the current work we aim to clarify the identity of *Serrata translata* and to describe two related new species from the Society Islands one from the Tuamotu Archipelago.

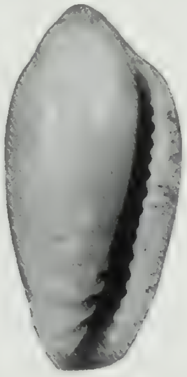


Fig. 1 *S. serrata* (Gaskoin 1849), type specimen.

Materials and methods

All live specimens were obtained by breaking apart friable dead coral lumps into a bowl and waiting for the animals to crawl out of the resulting grit and up the side

of the bowl. The coral lumps were taken from 0.2 to 12 metres by wading, snorkelling or scuba diving.

Dead shells were found in hand sieved sand from 1-10 metres, and in beach drift.

Photographs of the living animals were taken shortly after collection by the second author, using a Kodak DCS 410 digital single lens reflex camera with a 60 mm Nikkor 1:2.8 D macro lens and ring flash.

Abbreviations

BM(NH): Natural History Museum, London, England.

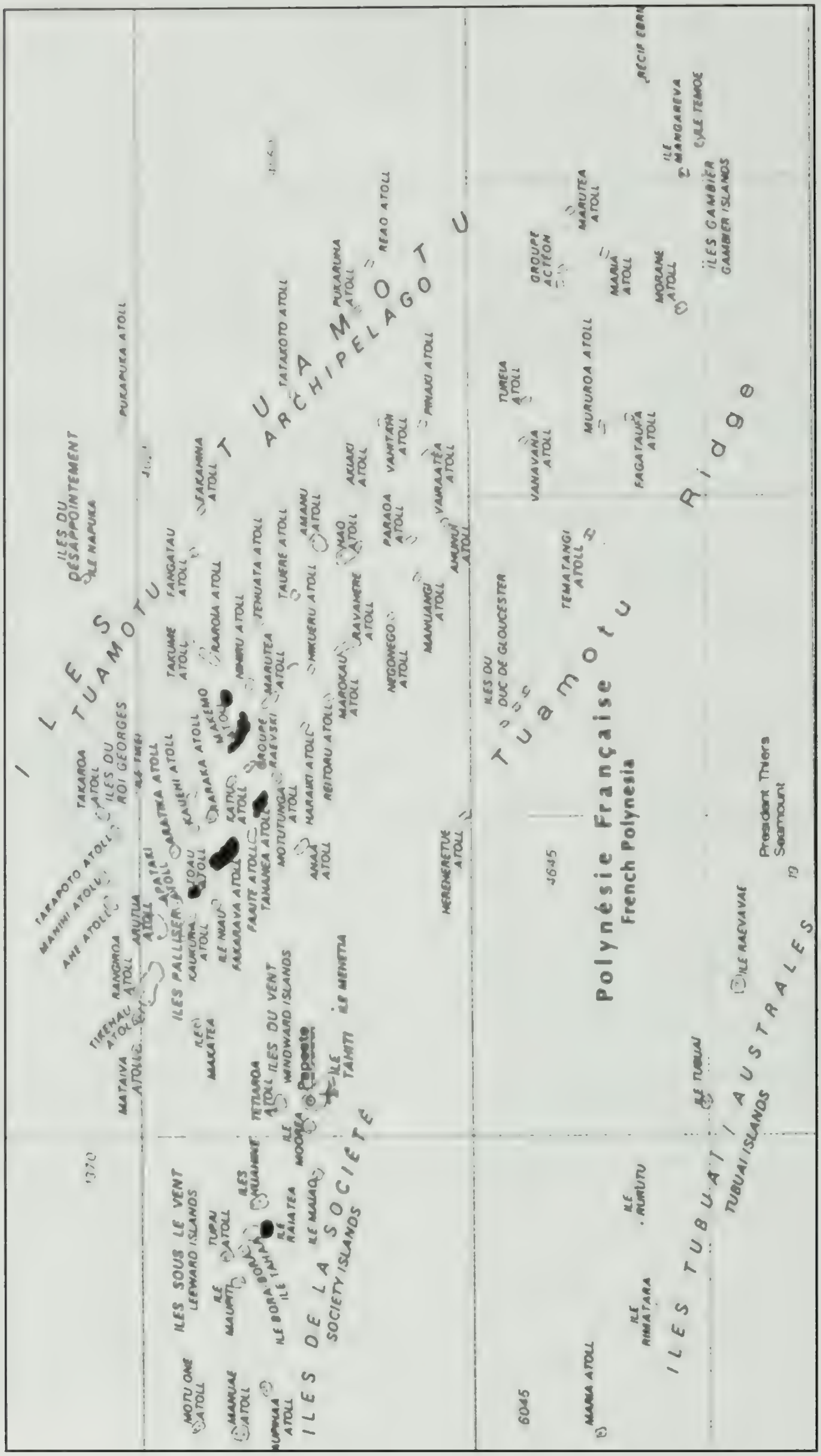

ILES TUAMOTU
TUAMOTU ARCHIPELAGO
ILES DU DESAPPOINTEMENT
ILE NAPUKA
PUKAPUKA ATOLL
TAKAPOTO ATOLL
MANIHI ATOLL
AHE ATOLL
TAKAROA ATOLL
ILES DU ROI GEORGES
MATAIVA ATOLL
TIKEHAU ATOLL
RANGIROA ATOLL
ARUTUA ATOLL
APATAKI
ILES PALLISER
KAUKURA ATOLL
TOAU ATOLL
ARATIKA ATOLL
KAUEHI ATOLL
RARAKA ATOLL
TAKUME ATOLL
FANGATAU ATOLL
FAKAHINA ATOLL
RAROIA ATOLL
NIHIRU ATOLL
MAKEMO ATOLL
TATAKOTO ATOLL
PUKARUA ATOLL
REAO ATOLL
ILE MAKATEA
ILE NIAU
FAKARAVA ATOLL
KATIU ATOLL
FAAITE ATOLL
TAHANEA ATOLL
GROUPE RAEVSKI
MARUTEA ATOLL
TEHUATA ATOLL
TAUERE ATOLL
AMANU ATOLL
MOTUTUNGA ATOLL
ANAA ATOLL
HARAIKI ATOLL
REITORU ATOLL
HIKUERU ATOLL
HAO ATOLL
AKIAKI ATOLL
MAROKAU ATOLL
RAVAHERE ATOLL
NENGONENGO ATOLL
PARAOA ATOLL
VAHITAHI ATOLL
MANUHANGI ATOLL
AHUNUI ATOLL
VAIRAATEA ATOLL
NUKUTAVAKE ATOLL
PINAKI ATOLL
TETIAROA ATOLL
ILES DU VENT
WINDWARD ISLANDS
Papeete
ILE MOOREA
ILE TAHITI
ILE MEHETIA
ILES SOUS LE VENT
LEEWARD ISLANDS
MOTU ONE ATOLL
MANUAE ATOLL
MAUPIHAA ATOLL
ILE MAUPITI
TUPAI ATOLL
ILE BORA BORA
ILE TAHAA
ILES HUAHINE
ILE RAIATEA
ILE MAIAO
ILES DE LA SOCIETE
SOCIETY ISLANDS
MEHETIA
1370
6045
MARIA ATOLL
ILE RIMATARA
ILE RURUTU
ILE TUBUAI
ILE RAEVAVAE
ILES TUBUAI / AUSTRALES
TUBUAI ISLANDS
President Thiers Seamount
19
Polynésie Française
French Polynesia
3645
HEREHERETUE ATOLL
ILES DU DUC DE GLOUCESTER
Tuamotu Ridge
TEMATANGI ATOLL
VANAVANA ATOLL
TUREIA ATOLL
MURUROA ATOLL
FANGATAUFA ATOLL
GROUPE ACTEON
MARUTEA ATOLL
MARIA ATOLL
MORANE ATOLL
ILES GAMBIER
GAMBIER ISLANDS
ILE MANGAREVA
ILE TEMOE
RECIF EBRIL

Fig. 2 Map of French Polynesia

MCZ: Museum of Comparative Zoology, Harvard, Massachusetts, U.S.A.
ANSP: Academy of Natural Sciences, Philadelphia.
AWC: Andrew Wakefield Collection.
TMC: Tony McCleery Collecton.
FBC: Franck Boyer Collection.
spm: live taken specimen
sh: dead collected shell
ad: adult subject
juv: juvenile subject

SYSTEMATICS

Genus ***Serrata*** Jousseaume, 1875
Serrata Jousseaume, 1875: 167, 230
[Type species originally designated as *Marginella serrata* Gaskoin, 1849]

Serrata translata **(Redfield, 1870)**

Figs. 3,4, 6-14

Marginella pyriformis Pease, 1868: 280.
[Non- *M.(Volutella) pyriformis* Carpenter, 1865]
Marginella translata Redfield, 1870: 259

Type material. Tomlin (1917) reports that the Pease collection in MCZ has a lot of twelve *M. pyriformis* from the Paumotu's labelled in Pease's handwriting (no. 24968). Johnson (1994) listed all the types of shelled Indo-Pacific molluscs described by W.H. Pease, but mentions only six type specimens: a lectotype selected by him (ANSP 29541), four paralectotypes (ANSP 391061), and one paralectotype (MCZ 24968).

After his death, much of Pease's duplicate material was known to have been traded and distributed widely. There is Pease material in the National Museum of Natural History, Washington D.C., and the Bernice Pauahi Bishop Museum, Honolulu, but the whereabouts of the remaining six of Pease's types is unknown to the authors.

Redfield (1870) based the renaming of *M. pyriformis* as *M. translata* on the type material of Pease.

The paralectotype MCZ 024968 (Fig. 3) was studied by the authors. It is a three banded specimen with 20 labial denticles, measuring 4.8 x 2.45 mm. The lectotype ANSP 29541 is also three banded and measures 4.0 x 2.0 mm. Johnson (1994) figures this lectotype (Pl.7, fig. 21).

Other material examined. Tuamotu Archipelago, Fakarava North. Outer beach, 1 ad. sh., TMC; Fakarava South. From dead coral lump in pass reef area, 15 ad. spm., TMC; outer beach, 1 ad. sh., TMC; 16°30.1'S 145°29.3'W, from a dead coral lump, in 1-2m, 1 ad. spm. and 1 juv. spm., AWC; Fakarava South-West. From a lump of dead coral on inner side of barrier reef flats in 1m, 1 ad. spm., AWC; From a lump of dead coral on inner side of barrier reef flats in 1m, 10 ad. spm., TMC; Makemo. From a dead coral lump in pass reef area, 1 ad. spm., TMC (Figs. 11,12); From inner and outer beaches, 3 ad. sh., TMC; Toau. Outer beach, 1 ad. sh., TMC; Outside main reef, in sand at 8m, 1 ad. sh., TMC; Outside main reef, in sand at 10m, 1 ad. sh., AWC.

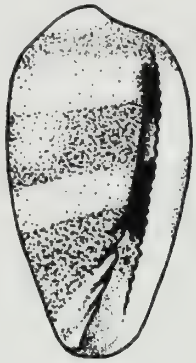


Fig. 3. *M. pyriformis*, paralectotype MCZ 024968

Original Description. 'Shell oblong pyriform, smooth, shining, white, with three yellowish bands at the suture, in the middle, and at the base; spire short; outer lip thickened externally, denticulate within its whole length; aperture narrow linear.'

Complementary notes. Pease described this species on the basis of shell shape. The type figure (Fig. 4) is indeed very pyriform. Of all 38 specimens of this species collected by the second author, none exhibited this extreme shape, and as the available type material is sub-pyriform to sub-cylindrical, the authors can only conclude that the lithographer exaggerated the pyriform outline of the shell. Samples taken by the second author reveal a great variability in shell profiles with sub-cylindrical (Figs. 6-8), cylindrical (Fig. 9), ovate (Fig. 10) and sub-pyriform (Fig. 11) specimens being found.

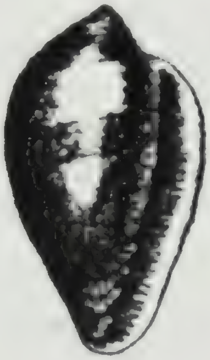


Fig. 4 *M. pyriformis*, original 1868 illustration

The number of labial denticles varies from 13 to 20, all strong except at the anterior extremity where they quickly become very faint and difficult to count.

The background colour of the shell is a translucent milky white, and is overlaid by three bands of yellow to dark brown. These bands are always visible, even in fresh dead collected shells. The anterior band emerges from the aperture at the level of the 'false fifth' plication, also colouring the posterior two plications but not the anterior two. It completely colours the anterior fifth of the body whorl, including the lip. The central band emerges from the posterior half of the aperture, covers the central fifth of the shell and colours the external varix a slightly darker shade. Colour does not extend, however, onto the edge of the lip or the denticles in this central zone. The posterior band emerges from the aperture at the level of the insertion of the lip. In many specimens viewed ventrally, this band can initially be rather faint, becoming more obvious further from the aperture. This band covers the subsutural fifth of the body whorl and the glazed suture. The spire and the protoconch remains translucent white in cleaned specimens, although in some deeply coloured specimens the sutural area of the spire is also coloured by the posterior band. The colour of the posterior band extends onto the edge of the lip, posterior to the first labial denticle. All three bands are visible within the aperture, showing through the translucent shell.

From a study of several animals: Type 2 animal (figs. 12-14). Tentacles long and slender, small black eyes laterally at base of tentacles. Siphon moderately long, foot slightly wider than shell, and normally 1.25x the length of the shell. Propodium widened at anterior border. Whole animal translucent except for milky opacity within the widened anterior border of propodium (mentum) and siphon (Fig. 13). Opaque white dots on the foot densely to sparsely distributed (Fig. 14). Spotting absent in the single live specimen obtained from Makemo (Fig. 12).

Presumed modified type 6 radula (after Coovert and Coovert 1995).

Type locality. Referred to as 'Paumotu's'. The Tuamotu Archipelago is the current name for this geographic area.

Distribution. Confined to the Tuamotu Archipelago in the South Central Pacific Ocean (Fig.1). The species was found on the atolls of Makemo, Fakarava and Toau. It was not found in the atolls of Tahanea and Faiite, but was replaced in these two localities by *S. tahanea* sp.nov. As only these atolls were checked, it is not yet possible to comment further on the distribution of *S. translata* within the Tuamotu's.

Habitat. Found protected within crevices of dead coral lumps. In each case, specimens were found in areas where there was current and clear water. Where specimens were collected on the inside of the barrier reef they were associated with the channels which drain the water coming over the reef into the lagoon.

Remarks. The specimens encountered exactly match the type material and type locality, therefore the identity of *S. translata* as being the three banded species from the Tuamotu Archipelago is beyond doubt.

The opaque white dots found on the foot and tentacles of the animal (Figs. 13, 14), are variable in intensity, and are apparently lacking in at least one population (Makemo). The chromatism of the animal is therefore an unreliable character to use when separating specimens of this species from *S. tahanea* sp. nov., *S. raiatea* sp. nov., and *S. polynesiae* sp. nov., and in any case conchological characters are perfectly adequate for identification purposes.

The largest shells were found in Toau, and the smallest in Makemo. The Makemo shells (Fig. 11) were significantly darker banded than the Fakarava examples, some of which had very pale bands indeed. Live *S. translata* were only found in Fakarava and Makemo.

***Serrata raiatea* sp.nov.**

Figs. 15-17

Type material. Society Islands, Raiatea, in dead coral lump in West Lagoon, holotype MCZ323755 (4.8x2.6 mm) (Figs 15-17).

Paratypes: 4 TMC, 4.9 x 2.45 mm; 4.8 x 2.45 mm; 4.9 x 2.6 mm; 4.4 x 2.25 mm; 1 AWC, 4.7 x 2.4 mm.

Other material examined. Society Islands, Raiatea West Lagoon. 2 ad. spm., 4.5 x 2.38 mm; 4.5 x 2.37 mm, TMC; In dead coral lumps, in 1m, 1 ad. spm., 4.9 x 2.35 mm, AWC.

Description. Shell small to medium sized (4.5-5 mm), sub-pyriform, sub-cylindrical or ovate. Spire low to moderately elevated, of 2 whorls excluding paucispiral protoconch of 1.5 whorls. Strong external varix. Lip internally thickened, with 15-18 strong denticles. Four strong columellar plications and a very weak 'false fifth' plication all occupying almost half the apertural length. The anterior two plications extending well out of the aperture. Aperture either flaring slightly along its length or parallel sided with a weak anterior flare. Base colour milky white with two brown bands on body whorl:

The anterior band originates at level of 'false fifth' plication and it is usually the narrower of the two bands. The posterior band emerges from the posterior fifth of the aperture and colours almost all of the posterior half of the body whorl, stopping just short of the suture (Fig. 17). The spire is uncoloured, whilst the external varix is coloured darker brown all along its length, although this colour is lost on progressing towards the very edge of the lip (Figs. 15, 16).

Animal based on a study of several animals from Raiatea: Type 2 animal. Tentacles long, slender. Small black eyes laterally positioned at base of tentacles. Siphon moderately long. Foot slightly wider than shell and normally 1.25x length of shell. Propodium widened at anterior border. Whole animal translucent, apart from milky opacity within the mentum and siphon. Spotting absent. External mantle not seen.

Presumed Modified type 6 radula. Coovert & Coovert (1995) extracted the radula (Fig. 5) from a specimen from Raiatea, but the decoration of the shell was not given. We therefore cannot attribute this radula specifically to either *S. raiatea* sp. nov. or *S. polynesiae* sp. nov.

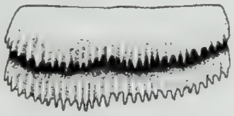


Fig. 5 Radula of *Serrata* sp. from Raiatea (Courtesy G.A. Coovert).

Type Locality. Raiatea, Society Islands.

Distribution. Five localities were checked in the Society Islands: Tahiti (Hitii), Tahiti (Maeva), Moorea, Huahine, and Raiatea. *S. raiatea* sp. nov. was only found on Raiatea, and subject to further investigation, we conclude that it is possible that *S. raiatea* sp.nov. is endemic in the Island of Raiatea.

Habitat. Found protected within the crevices of dead coral lumps, in shallow water.

***Serrata polynesiae* sp. nov.**

Figs. 18-23

Type material. Society Islands, Raiatea, in dead coral lump in West Lagoon, holotype MCZ323756 (4.5x2.4 mm) (Figs. 18-20).
Paratypes: 1 TMC, 4.9x2.6 mm; 1 AWC, 4.9x2.4 mm.

Other material examined. Society Islands, Raiatea West Lagoon. 1 ad. spm., 4.45 x 2.35 mm, TMC (ex B. Lipe coll.); Raiatea. 3 sh., TMC.

Description. Shell small to medium sized (4.5-5 mm), sub-pyriform, sub-cylindrical or ovate. Spire low to moderately elevated, of 2 whorls excluding paucispiral protoconch of 1.5 whorls. Strong external varix. Lip internally thickened, with 15-18 strong denticles. Four strong columellar plications and a very weak 'false fifth' plication all occupying almost half the apertural length. The anterior two plications extending well out of the aperture. Aperture either flaring slightly along its length or parallel sided with a weak anterior flare. Base colour milky white with a single wide brown band on body whorl. The band, which is slightly darker in colour at its edges, originates from posterior half of aperture (Fig. 18). Spire uncoloured, whilst the external varix is coloured darker brown all along its length. This colour is present also on the very edge of the lip (Figs. 18, 19).

Animal based on a study of several animals from Raiatea: Type 2 animal (fig. 21-23). Tentacles long, slender. Small black eyes laterally positioned at base of tentacles. Siphon moderately long. Foot slightly wider than shell and normally 1.25x length of shell. Propodium widened at anterior border. Whole animal translucent, apart from milky opacity within the mentum and siphon. Spotting absent. External mantle not seen.

Presumed Modified type 6 radula. Coovert & Coovert (1995) extracted the radula (Fig. 5) from a specimen from Raiatea, but the decoration of the shell is unknown. We therefore cannot attribute this radula specifically to either *S. raiatea* sp. nov. or *S. polynesiae* sp. nov.

Type locality. Raiatea, Society Islands.

Distribution. Five localities were checked in the Society Islands: Tahiti (Hitii), Tahiti (Maeva), Moorea, Huahine, and Raiatea. *S. polynesiae* sp. nov. was only found on Raiatea, and subject to further investigation, we conclude that it is possible that *S. polynesiae* sp.nov. is endemic in the Island of Raiatea.

Habitat. Found protected within the crevices of dead coral lumps, in shallow water.

Remarks. Both *S. raiatea* and *S. polynesiae* have been found living within a 100 square metre area of reef system in Raiatea. Intergrading specimens (in the form of single banded shells where the band starts at the suture, or two banded shells where the posterior band starts some distance from the suture) have been looked for but not found. It appears therefore that here we have a case of a true sympatric occurrence of two very closely related sibling species. The principal differences between the two species are based on the chromatism of the shell with respect to the relative position of the band(s). A secondary differentiating character is the uncoloured lip edge in *S. raiatea* compared with the coloured edge in *S. polynesiae*. Their affinity to *S. translata* from the Tuamotu's is clear, but this is not as close as their relationship to each other for the following reasons;

1. The columellar plications of *S. raiatea* and *S. polynesiae* lie at a noticeably different angle to the long axis of the shell than those of *S. translata*: In *S. raiatea* and *S. polynesiae* the plications tend to lie more at right angles to the long axis (Figs. 15, 18), whereas in *S. translata* they tend to lie more obliquely to it (Figs.6, 9-11).
2. The yellow brown banding does not colour the columellar plications in *S. raiatea* and *S. polynesiae*

but it does colour the posterior two plications in *S. translata*

3. *S. translata* has an opaque white spotted animal (except one specimen from Makemo), whereas in *S. raiatea* and *S. polynesiae* the animals are identical and these spots are always absent.

4. It has been observed that the 'pod' which surrounds the eye is larger in *S. raiatea* and *S. polynesiae* than it is in *S. translata*.

5. In most cases the shells of *S. raiatea* and *S. polynesiae* are smaller than shells of *S. translata*, sometimes by as much as 1 mm.

6. *S. raiatea* and *S. polynesiae* occur sympatrically, whilst *S. translata* occurrs approximately 200 nautical miles away in the Tuamotu's, and separated from the former by deep ocean. As well as the phenotypic differences noted in 1-5 above, *S. translata* is likely to have evolved genotypically further from the two Society Island species due to this geographic separation over geological time.

***Serrata tahanea* sp. nov.**

Figs. 24-30

Type material. Tuamotu Archipelago, Tahanea, in dead coral lump in shallow water, holotype MCZ 323757 (3.6 x 1.85 mm) (Figs. 24-26).
Paratypes: 1 MCZ 323758; 2 AWC, 4.0 x 2.0 mm; 3.7 x 1.75 mm; 1 FBC (unmeasured); 6 TMC, 3.8 x 2.0 mm; 3.5 x 1.9 mm; 3.8 x 1.95 mm; 3.8 x 1.8 mm; 3.65 x 1.8 mm; 3.6 x 1.8 mm.

Other material examined. Tuamotu Archipelago, Tahanea, 35 ad. spm., TMC; pinnacle reef at 16°51.6'S 144°40.5'W 28 ad. sh., TMC; pinnacle reef at 16°51.6'S 144°40.5'W 2 ad. sh., AWC; reef near first pass, 1 ad. sh., AWC; Faiite, from beach outside the motu's, 2 ad. sh., TMC.

Description. Shell small (3.5-4.0 mm), sub-pyriform to sub-cylindrical with a low to moderately elevated spire of 2 whorls, excluding protoconch. Paucispiral protoconch of 1.5 whorls. Strong external varix. Lip thickened internally, with 17-20 strong denticles. Four strong columellar plications and a very weak 'false fifth' plication, together occupying nearly half the aperture. The anterior two plications extending well out of the aperture. Aperture parallel sided with only a slight anterior flare. Colour uniformly pale translucent golden-tan.
Animal: Based on a study of several animals from Tahanea. Type 2 animal (Fig. 29, 30). Tentacles long and slender. Small black eyes, siphon moderately long, foot as wide as shell and 1.5x as long. Propodium widened anteriorly. Animal translucent except for milky opacity within the mentum. Spotting absent. External mantle not seen.
Presumed modified type 6 radula (after Coovert & Coovert, 1995).

Type locality. Tahanea, Tuamotu Archipelago (Fig. 1).

Distribution. In the present state of our documentation, only known from the atolls of Tahanea and Faaite, Tuamotu archipelago (Fig. 1).

Habitat. Only one living colony was found, and this was located on a reef just inside one of the three passes. The water here was particularly clear, as it is throughout Tahanea lagoon. The specimens were found protected within the crevices of dead coral lumps in depths from 0.2 to 12 metres, and most of the dead corals had some green weed growth attached.

Remarks. This species is similar in shell shape to *S. translata*. The configuration of the columellar plications and the number of labial denticles are also shared features. The diagnostic differences lie in the colouration of the shell (uniformly golden-tan, and never banded) and the smaller labial denticles, though the small size in relation to *S. translata*, *S. raiatea* and *S. polynesiae* is also an important factor. It is also clear that the animal (Figs. 31, 32) lacks the opaque white spots that are present on most specimens of the only other Tuamotu species, *S. translata*. This is, however, an unreliable (and unnecessary) character on which to base an identification since Makemo specimens of *S. translata* also do not have a spotted animal, and they can be reliably separated from *S. tahanea* on conchological grounds alone. The second author did not find *S. translata* occuring sympatrically with this species, nor were intergrading specimens of the two species found.

Figures 6-30

6-14. *Serrata translata* Redfield, 1870

6-8. Fakarava, 5.0x2.6mm, TMC; 9. Toau, 5.9x3.0mm, TMC; 10. Fakarava, 5.2x2.9mm, TMC; 11. Makemo, 4.2x2.2mm, TMC; 12 . Makemo, live animal; 13. Fakarava, view of head and anterior part of foot; 14. Fakarava, view of posterior part of foot.

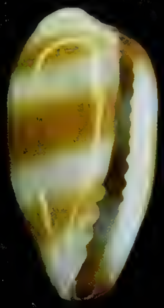
15-17. *Serrata raiatea* sp. nov., Raiatea, 4.8x2.6mm, holotype, MCZ323755.

18-23. *Serrata polynesiae* sp. nov.

18-20. Raiatea, 4.5x2.4mm, holotype, MCZ323756; 21-23. Raiatea, different views of the animal.

24-30. *Serrata tahanea* sp. nov.

24-26. *Serrata tahanea* sp. nov., Tahanea, 3.6x1.85mm, holotype, MCZ323757; 27-28. Tahanea, 3.65x1.85mm, showing colour when fresh; 29-30. Tahanea, two different views of the animal.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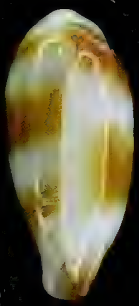
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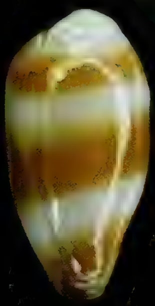
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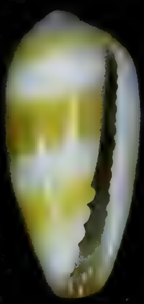
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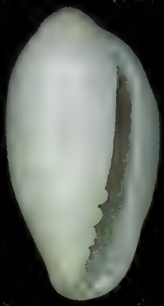
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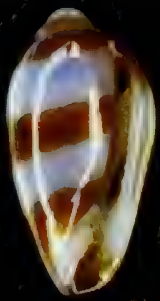
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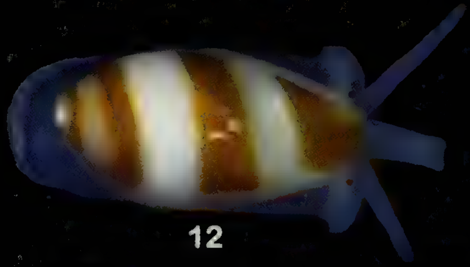
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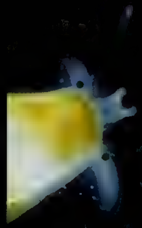
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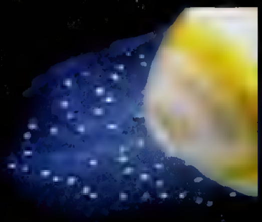
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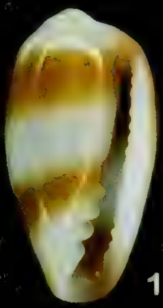
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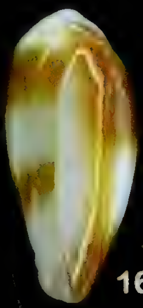
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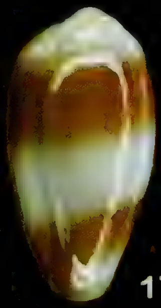
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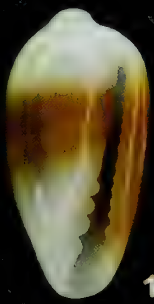
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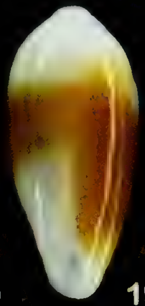
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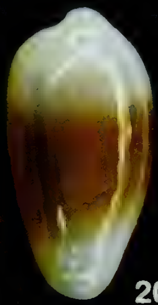
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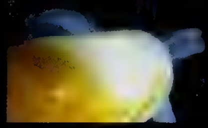

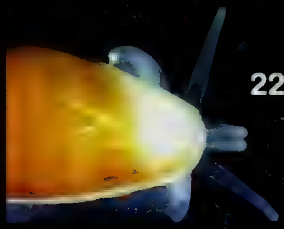
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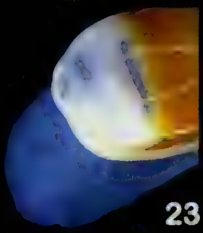
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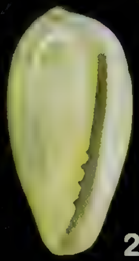
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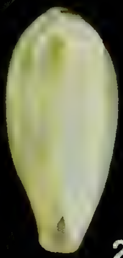
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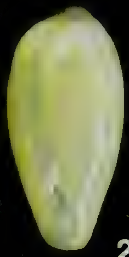
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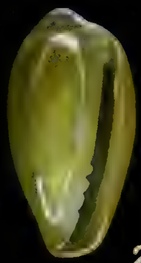
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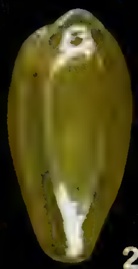
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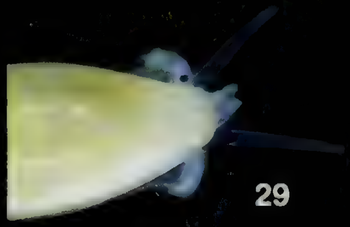
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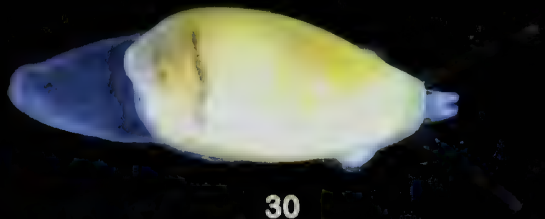
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Two dead, unbanded shells of a similar size to *S. tahanea* sp.nov. were found on Faiite, and the authors consider that these are best placed in this taxon rather than with *S. translata*.

The golden-tan colour of live collected specimens (Figs 27,28) fades rapidly after collection and cleaning of the shells to a translucent pale yellow (Figs. 24-26).

DISCUSSION

Shells of the four taxa *S. translata* Redfield, 1870, *S. raiatea* sp.nov., *S. polynesiae* sp.nov. and *S. tahanea* sp.nov. discussed herein can be easily separated on the basis of their size and colour pattern: *S. translata* always has three bands and is the largest (av. 5.1 mm). *S. raiatea* sp.n. has two bands and is slightly smaller (av. 4.7 mm) whereas its sibling species *S. polynesiae* has one broad band. *S. tahanea* has no banding, is a solid orange-tan colour and is the smallest of the four (av. 3.65 mm).

The Tuamotu's and the Society Islands are the first stronghold of Marginellidae in the Central South Pacific when progressing from East to West. Exploration of shallow water habitats in the Cook Islands, the Samoa's, Tonga (including the most southern point at Minerva reefs) and Fiji by the second author has not provided any further records. The majority of the atolls and islands in the Tuamotu's and Society Islands still remain unexplored for micromolluscs, and it would not be surprising if further locality records of the described species are made there in the future. It is also possible that further discoveries of new sibling species in the *Serrata* group may be made with future collecting efforts throughout French Polynesia.

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Description of *Lischkeia mahajangaensis* n. sp. (Gastropoda: Trochidae: Eucyclinae: Calliotropini) from East Madagascar

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KEYWORDS. Gastropoda, Trochidae, Madagascar, *Lischkeia mahajangaensis* n. sp.

ABSTRACT. *Lischkeia mahajangaensis* n.sp. is described and compared with similar Calliotropini species from deep waters of the Indo-Pacific area.

RESUME. *Lischkeia mahajangaensis* n.sp. est décrite et comparée avec des espèces analogues de Calliotropini d'eaux profondes de la zone Indo-Pacifique.

INTRODUCTION

A few month ago, Guido T. Poppe, a well known shell collector from Belgium, entrusted me with two shells from deep water off East Madagascar. These shells belong obviously to the subfamily Eucyclinae, tribe Calliotropini, probably to the genus *Lischkeia* Fischer in Kiener, 1879. They reminded me two other slightly bigger shells, coming from the same area, in the material of the Muséum national d'Histoire naturelle of Paris. Further studies showed that these four shells belong to an unknown species that is described in this paper.

Abbreviations

Repository

MNHN : Muséum national d'Histoire naturelle, Paris, France.
BM(NH) : Natural History Museum, London, United Kingdom.
MNB : Museum fur Naturkunde, Berlin, Germany.

Other abbreviations

D : diameter
H : height
HA : height of aperture
P1, P2, P3 : primary cords (P1 is the most adapical)
dd : no live-taken specimens present in sample
lv : live-taken specimens present in sample

Systematics

Family: **TROCHIDAE** Rafinesque, 1815
Subfamily : **EUCYCLINAE** Koken, 1897
Tribe : **CALLIOTROPINI** Hickman and Mc Lean, 1990
Genus: ***Lischkeia*** Fischer in Kiener, 1879

Type species: *Trochus moniliferus* Lamarck, 1816 (by o.d.Fischer, 1879) – Recent, Japan Sea

Lischkeia mahajangaensis n.sp.
Figs 1-4

Type material. Madagascar, 17°50'S – 43°07'E, trawled in 1475-1530 m, holotype MNHN, 28.5 x 22.3 mm (lv), coll. A. Crosnier; 18°00'S – 43°00'E, trawled in 1715-1750 m, paratype MNHN, 27.2 x 21.6 mm (dd), coll. A. Crosnier; off Mahajanga (formerly Majunga), trawled in 800 m, 2 paratypes (dd) coll. G.T. Poppe*.

Diagnosis. A typical *Lischkeia* species, shell conoidal, with last spire worls bearing one strong spiral cord and a weak peripheral cord only clearly visible on the last whorl, with a convex ridged base and without umbilicus.

Description. *Shell* not very large for genus (height up to 28.8 mm, width up to 22.3 mm), conoidal in shape; spire high, 1.1x to 1.2x higher than diameter, 3.0x to 3.2x higher than aperture, anomphalous.
Protoconch of about 1 to 1.5 whorl, partly or fully damaged in all available specimens.
Teleoconch of 8 to 8.5 whorls, bearing one strong, almost median, spiral cord on all the whorls; one subsutural spiral cord on first whorls and one suprasutural spiral cord only on last whorls. Suture visible, not canaliculated.
First teleoconch whorl convex, sculptured by two granular primary cords and about 15 axial prosocline ridges; P1 weakest, close to suture; beads of cords at intersections of cords and ridges, small, isolated; distance between P1 and P2 similar to distance between P2 and suture. On second whorl, P2 becoming weakly stronger than P1, with rounded

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* Stanislas Leclefstraat, 8, 2600, Berchem, Belgium.

well separated beads; axial ridges becoming stronger. On third whorl, beads of P2 become clearly stronger than on P1; shape of area between cords becoming concave; beads becoming pointed.

On fourth whorl, nodules of P2 becoming sharp pointed, horizontally bent; nodules of P1 adapically oriented; axial ridges becoming obsolete. Axial ribs beginning to disappear on fifth whorl, obsolete on sixth whorl; nodules of P1 becoming weaker on fifth whorl, obsolete on sixth whorl; P3 emerging from suture, much weaker than P2, with small abapically oriented pointed nodules (3 nodules of P3 for one single of P2 on same distance). On two last whorls, P1 absent; P3 peripheral on last whorl, still much weaker than P2.

Aperture ovate, almost circular, without ridges within; outer lip thin at rim, rounded; inner lip thicker, with only a very weak angle at meeting point with outer lip.

Columella weakly arched, smooth; callus completely closing umbilicus, producing expansion at bottom.

Base convex, with 4 spiral cords and fine axial threads making cords granular; distance between cords much larger than cords; cord near umbilical area much stronger, with nodules bigger than those of 3 other cords.

Colour of protoconch and teleoconch light brown to almost white; columella nacreous.

Operculum corneous, multispiral with central nucleus.

	H	D	HA	H / D	H / HA
holotype	28,5	22,3	9,6	1,3	3,0
paratype 1	27,2	21,6	8,7	1,3	3,1
paratype 2	25,5	19,3	7,9	1,3	3,2
paratype 3	24,0	21,6	7,9	1,1	3,0

Table 1. - *Lischkeia mahajangaensis*. Shells measurements in mm – sample of 4 specimens.

Discussion. The global shape of the new species could implies that it could belong to the genus *Calliostoma*, but the apparent lack of reticulate network of fine ridges on the protoconch and the type of sculpture of the teleoconch whorls lets rather infer that the genus *Lischkeia* can be a good choice.

Lischkeia mahajangaensis n.sp. seems to be close to *Lischkeia oxycona* (Smith, 1899) from the Andaman Islands. No type of this species was available (maybe one type could be in Zoological Survey of India) but, *fide* the description, *L. oxycona* is a little smaller with 10 whorls, has an umbilicus and 5 cords, instead of 4, on base.

The new species is also superficially similar to *Calliotropis metallica* (Wood-Mason & Alcock, 1891) (Figs 5-6) from Indian Ocean, but this species has also an umbilicus and bears on all the teleoconch whorls two spiral cords similar in size and an additional weak suprasutural spiral cord appearing very late.

The shape of *Lischkeia mahajangaensis* n.sp. seems to be close to the shape of *Solariella infralaevis* von Martens, 1898 (Figs 7-8), especially when seeing the illustration of the original description. However, there is no doubt that the two species are different, because *S. infralaevis* is less elevated, keeps a strong subsutural cord on last whorls and only has two spiral cords on the base, one external and one around umbilicus, with a smooth area between them.

Regarding the species having a concealed umbilicus and the same number of spiral cords on the whorls and the base, the description of *L. mahajangaensis* n.sp. can remember *Calliotropis granolirata* (Sowerby, 1903) (Figs 9-10), but this species has a less elevated spire and very different spiral cords on the whorls and the base: the adapical cord is almost of the same size as the median one, with axially elongated nodules.

The new species is also superficially similar to *Lischkeia undosa* Kuroda & Kawamura, 1956 (Figs 11-12) from Japan and the Philippines, but this species is bigger and has a very different sculpture between primary cords, with numerous thin spiral cords and axial lamellae.

The new species also can be feeled close to *Lischkeia* (*Turcicula*) *imperialis* (Dall, 1881) from north-east Atlantic, but this species is much bigger, has more convex whorls, a more elongated aperture and more numerous basal spiral cords.

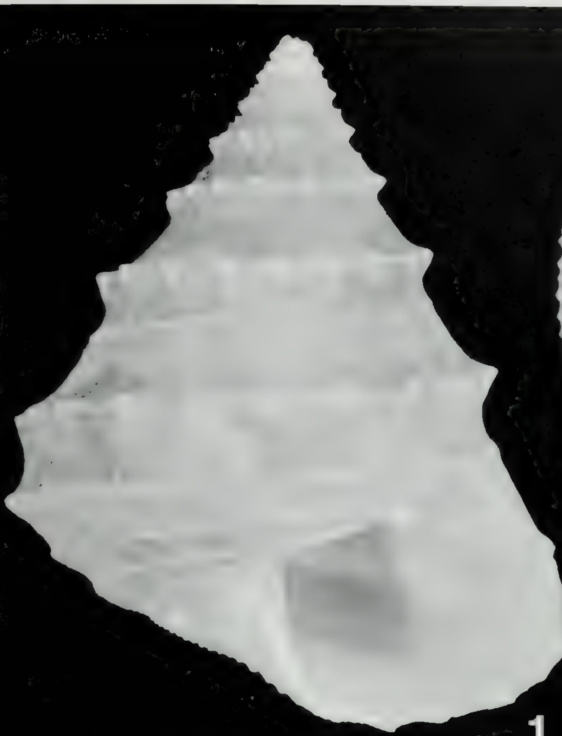
Etymology. The new species is named after Mahajanga (Majunga), the well-known town nearest from the type locality.

Figures 1-6

1-3. *Lischkeia mahajangaensis* n.sp. holotype MNHN, Madagascar, 28.5 x 22.3 mm : frontal view - basal view – protoconch and first whorls.

4. *Lischkeia mahajangaensis* n.sp., paratype MNHN, Madagascar, 27.2 x 21.6 mm.

5-6. *Calliotropis metallica* (Wood-Mason & Alcock, 1891), Madagascar, 25.5 x 22.2 mm, MNHN.



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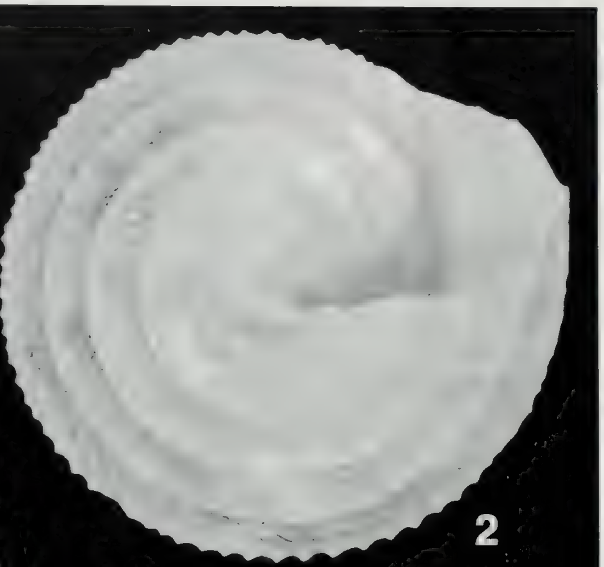

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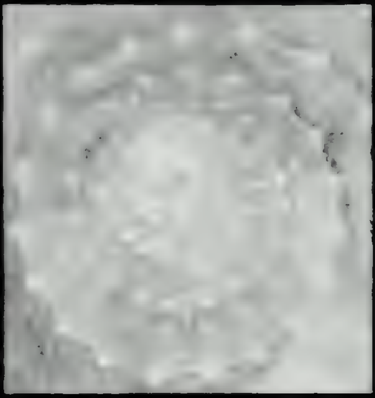

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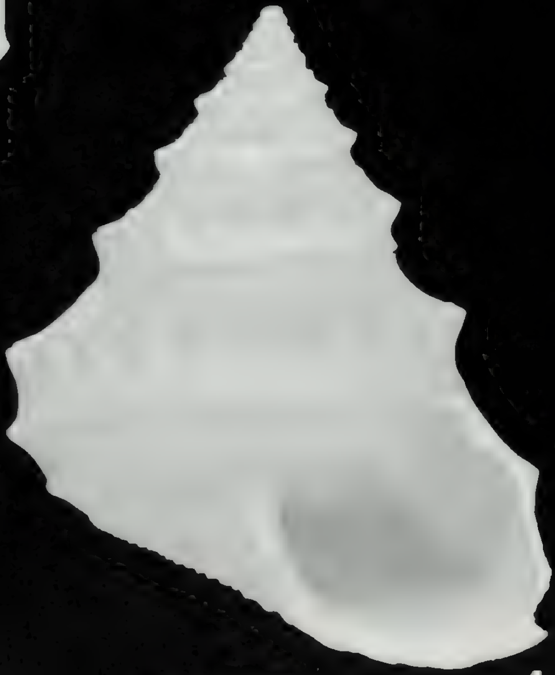

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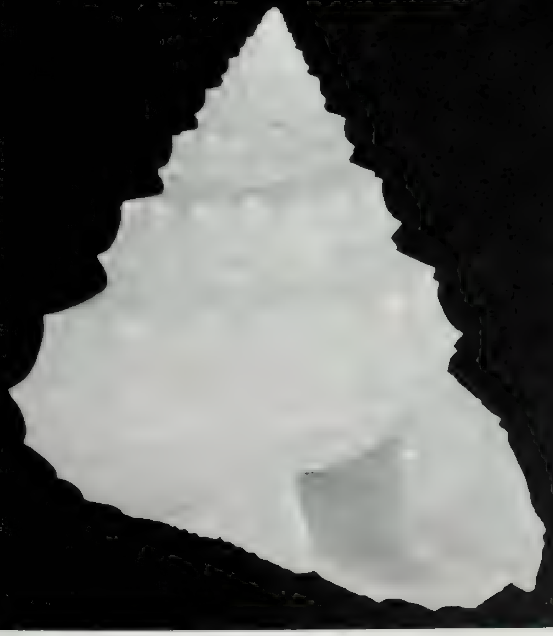

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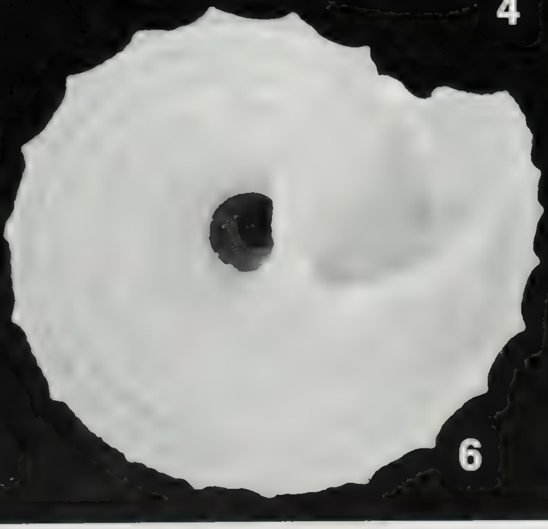

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I would like to thank Dr P. Bouchet (Muséum national d'Histoire naturelle, Paris) for access to the malacological ressources of the MNHN and G.T. Poppe (Berchem, Belgium) who entrusted me some specimens upon which the present work is built. I am also very grateful to V. Heros (MNHN) for her help in my search of various scientific papers. Also, I am very especially grateful to Dr J.L. Van Goethem (Institut royal des Sciences naturelles de Belgique, Brussels) for his help to borrow types.
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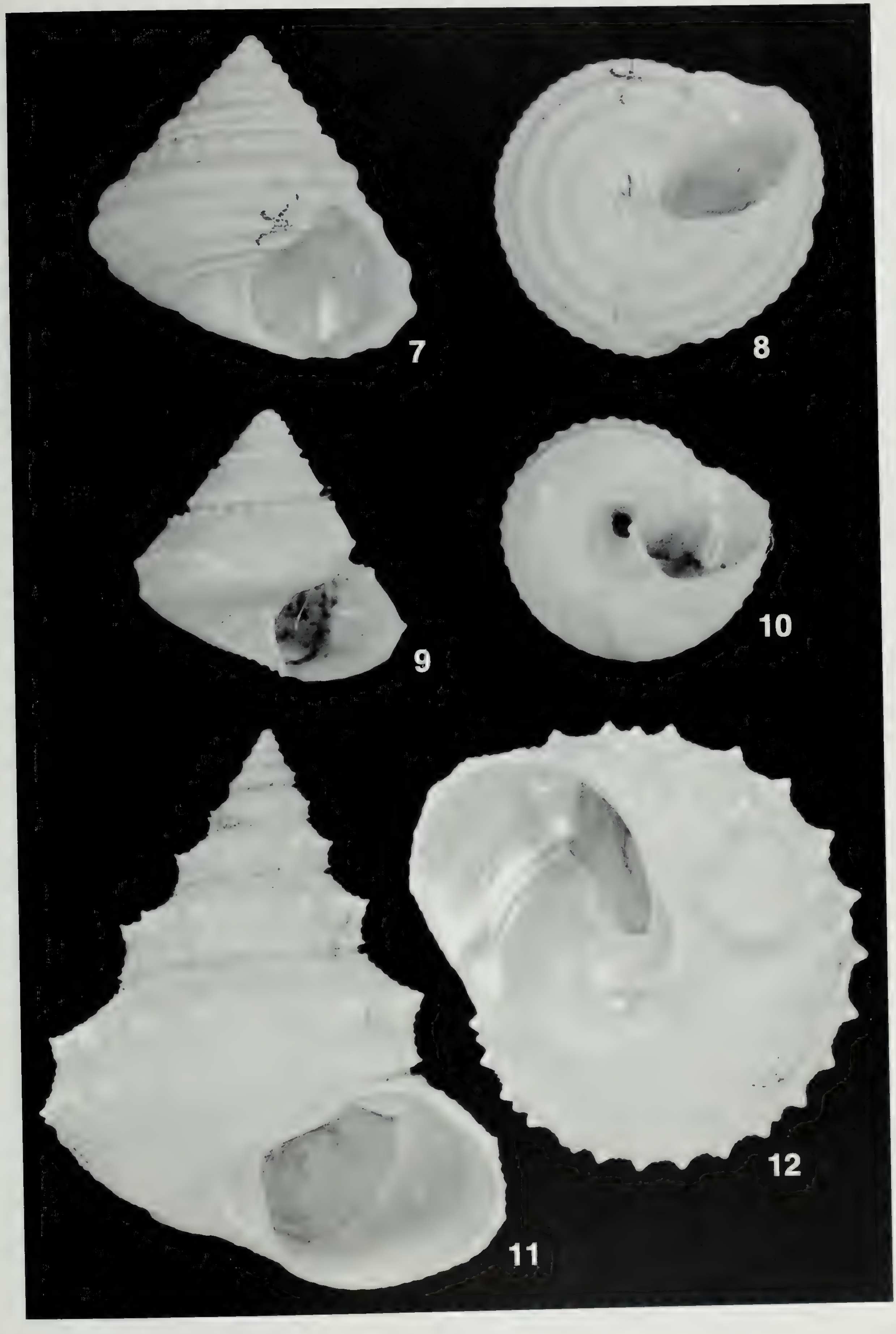
Figures 7-12

7-8. *Calliotropis granolirata* (Sowerby, 1903), syntype BM(NH) (1903.7.27.65), South Africa, 13.0 x 12.0 mm.
9-10. *Solariella infralaevis* von Martens, 1898, holotype MNB (59.980), off Somalia coast, Valdivia expedition stn. 256, 10.0 x 9.0 mm.
11-12. *Lischkeia undosa* Kuroda & Kawamura, 1956, Philippine Islands, 43 x 35.7 mm, coll. C. Vilvens.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Two new species of *Lyria* (Gastropoda: Volutidae) from New Caledonian waters

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KEYWORDS. Gastropoda, Volutidae, New Caledonia, *Lyria poppei* sp. nov., *Lyria grandidieri* sp. nov.

ABSTRACT. Two new species of Volutidae, *Lyria poppei* sp. nov., *Lyria grandidieri* sp. nov. are described from New Caledonia and compared with their relatives.

INTRODUCTION

Until recently, only five *Lyria* were known living in deep water off New Caledonia: *Lyria (Lyria) habei* Okutani,1979, *Lyria (Plicolyria) boholensis* Poppe, 1987; *Lyria (Plicolyria) exorata* Bouchet & Poppe, 1988; *Lyria (Plicolyria) kuniene* Bouchet,1979 and *Lyria (Plicolyria) planicostata* (Sowerby III, 1903). Since three years, experimental dredgings in deep waters off New Caledonia, conducted by the Muséum national d'Histoire naturelle (MNHN), Paris, and IRD (Expédition *Musorstom 5*), as well as by the private vessel *TUI2*, have led to the discovery of three new *Lyria*. One of these, *Lyria (Lyria) guionneti* Poppe, 2001 is already known to science, two others are described here.

SYSTEMATICS

Class **GASTROPODA**
Superfamily **VOLUTOIDEA**
Family **VOLUTIDAE** Rafinesque, 1815
Subfamily **VOLUTINAE** Rafinesque, 1815
Tribe **Lyrinii** Pilsbry & Olsson, 1954
Genus ***Lyria*** Gray, 1847
Subgenus *Plicolyria* Bail & Poppe, 2001
Type species: *Lyria planicostata* (Sowerby III, 1903)

Lyria (Plicolyria) poppei sp.nov.
Figs 1-2, 5-10

Type Material. Holotype: length 47.2 mm, width 18.3 mm, Muséum national d'Histoire naturelle (MNHN), Paris.
Campagne *Norfolk 1*, N/O *Alis*, June 2001, Station DW 1651, New Caledonia, Norfolk Ridge, E Jumeau Banc, 23,27.3' S - 167,50.4' E, 409 - 439 m.
Paratype 1: length 43.0 mm, width 17.8 mm
Paratype 2: length 32.0 mm, width 14.0 mm
Paratype 3: length 33.5 mm, width 14.4 mm
Paratype 4: length 37.0 mm, width 14.7 mm
Paratype 5: length 30.2 mm, width 13.3 mm

Type locality. 23.46' S - 168.17 E, N of Norfolk Ridge.

Range. At present only known from the Norfolk Ridge, New Caledonia.

Habitat. On rocky and gravel bottom between 276 and 450 m.

Description. Shell light, solid, ovate fusiform, polished surface. Protoconch bulbous of 1.75 elevated smooth whorls.
Transition of protoconch into teleoconch gradual. Teleoconch with 5-6 broad convex whorls, slightly shouldered with rather deep impressed suture. Spire moderately high, 40% of total length. Sculpture consisting of strong rounded axial ribs: 10-11 broad, well-defined on first whorls, 8-9 on body whorl, adapically attenuated on adult shell. No spiral sculpture. Aperture high, narrow. Columella with a thin callus bearing numerous white plaits as follows: one anterior small, next three stronger of which two first more prominent, followed adapically by 5-7 distinct lirae. Siphonal notch shallow and broad. Background colour light beige, marked with three spiral row of brown blotches on the body whorl, merging in some specimens into continuous bands, overlaid by a spiral pattern of thin brown lines, sometimes absent on the intercostal spaces, often gathered into three bundles, the anterior one the thicker, limiting two pale bands without any marks.
Aperture beige. Columella and plaits white.

Animal. Foot and head of the live animal is cream with a pattern of closely spaced radiating reddish lines, forming stripes on the siphon and tentacles.
Anatomy and radula could not be studied.

Discussion. *Lyria (Plicolyria) poppei* can be compared with the other members of the subgenus featured by following characters: Shells large, thick, with prominent broad axial ribs and a small to very small protoconch. Ground colour tan brown with a silky gloss, most often with a spiral line pattern. Lives in deep waters of the W Pacific Ocean only.

Lyria (Plicolyria) kuniene Bouchet,1979

Most of its conchological characters such as raised bulbous protoconch and general shape show a close relationship with *L. poppei*. Nevertheless it differs by: a more elevated protoconch bearing a whorl more, a less convex and higher spire, thinner and more acute axial ribs and a spiral pattern that consists of only dashes regularly spaced on the summit of the axial ribs with a faint row, often obsolete, of pale brown blotches. Its NE range does not overlap that of *L. poppei*.

Lyria (Plicolyria) boholensis Poppe, 1987

This species is usually found in Philippine waters and in dispersed localities, including the New Caledonian waters. It bears the same pattern of bundles of spiral lines but it is discontinuous, marking the ribs only with rare small brown blotches. It differs also by its minute protoconch, a more solid structure and laterally pinched axial ribs.

Lyria (Plicolyria) planicostata (Sowerby III, 1903)

Occasionaly found in New Caledonian waters, this species is very close to *L. boholensis*, sharing the same minute protoconch and general outline. It differs by its large size with thick axial ribs. Its surface bears rows of deep brown blotches and is overlaid by a dense pattern of minutely spaced spiral lines without any discontinuity.

Remarks. This species is closely related to *L. kuniene*. Some specimens of *L. poppei* have an almost identical pattern and one may consider it as a subspecies of the latter. However, besides its remote and very localised endemism on a small submarine plateau, differences based upon the morphological characters are constant and no intermediate specimens are found.

Etymology. The specific name honours Guido Poppe for his considerable contribution to the advancement of the knowledge of Volutidae.

Subgenus *Lyria* Gray, 184
Type species: *Lyria nucleus* (Lamarck, 1811)

Lyria (Lyria) grandidieri n. sp.
Figs 1-4, 7

Type Material. Muséum national d'Histoire naturelle (MNHN), Paris
1- Specimens from *TUI2*-Expedition donated to MNHN:
Holotype: length 37.0 mm, width 16.1 mm
Paratype 1: length 31.2 mm, width 14.8 mm
Paratype 2: length 27.4 mm, width 13.1 mm
Four additional specimens and one fragment.
2- Specimens from *Musorstom 5* Expedition *Coriolis* Stn 301, 22°07 S, 159°25 E, (487-610 m)
Paratype 3: length 25.2 mm, width 11.4 mm
Paratype 4: length 21.2 mm, width 10.2 mm

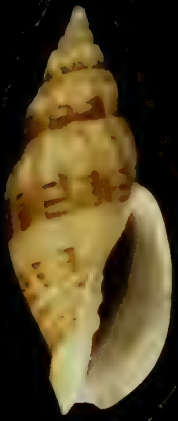
Type locality. Off Favre Islet, N Entrecasteaux Reefs, N New Caledonia.

Range. Only known from the type locality (TU12) and from the Bellona Plateau (Musorstom 5). Its actual geographical range is probably larger and the species possibly lives on the deepwater plateaus around the known localities.

Habitat. On hard bottom, between 280 m and 500 m deep.

Description. Shell small, solid, ovate, with silky surface. Protoconch bulbous of 2 glossy smooth whorls. Transition of protoconch into teleoconch short and gradual. Teleoconch of 5.5, convex whorls with a deep impressed suture. Spire 44% of the total shell length. Sculpture consisting of 9-10 strong, low and rounded orthocline axial ribs, more attenuated on adult shell and not reaching anterior third of body whorl. Spiral sculpture of very faint grooves, far apart and hardly visible on the posterior two-thirds of the last whorl, more numerous and more conspicuous towards the siphonal notch. Outer lip thickened and flared at its anterior half. Columella with glossy callus bearing 9-10 distinct plaits, the first three, the strongest.

Plate 1 (Figs 1-12)
1-2. *Lyria (Plicolyria) poppei*
1. Holotype. 47.2 x 18.4 mm, ventral view; 2. Holotype, dorsal view.
3-4 *Lyria (Plicolyria) kuniene* Bouchet,1979, 71 mm.
5-10. *Lyria (Plicolyria) poppei*
5. Paratype 2. 32 x 14 mm, ventral view; 6. Paratype 1. 43.0 x 17.8 mm, dorsal view; 7. Paratype 2. 32 x 14 mm, dorsal view; 8. Paratype 1. Detail of the protoconch; 9. Paratype 3. 33.5 x 14.4 mm, dorsal view; 10. Holotype, detail of spire.
11. *Lyria (Plicolyria) kuniene* Bouchet,1979, 71 mm, detail of spire; **12.** *Lyria (Plicolyria) poppei*, paratype 4. 37.0 x 14.7 mm. Dorsal view.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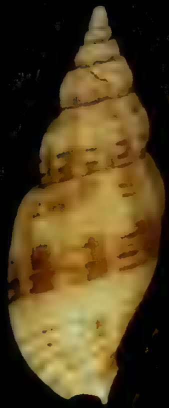
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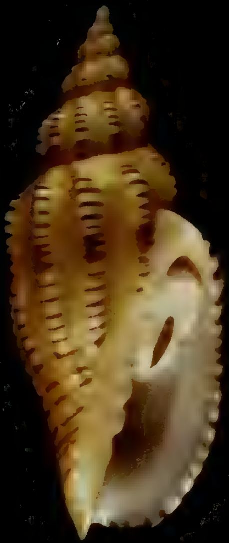
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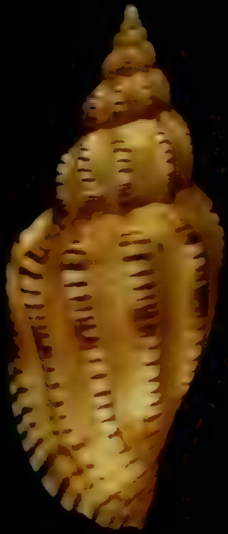
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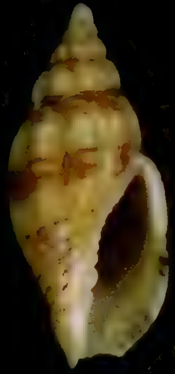
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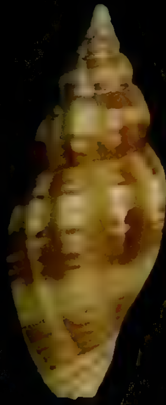
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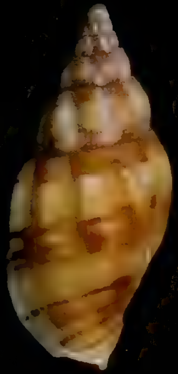
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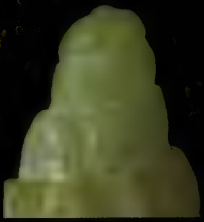
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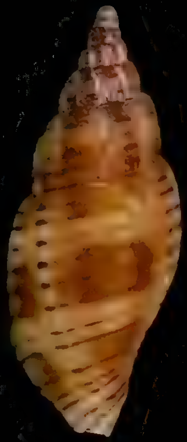
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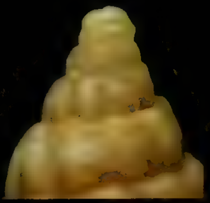
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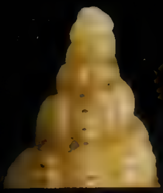
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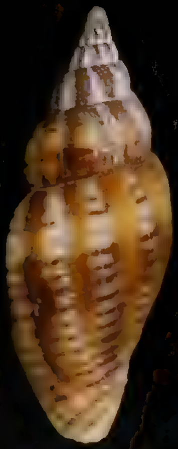
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Siphonal notch very shallow and broad. Background colour plain buff with. On some specimens, a very faint brown spiral pattern marked on the body whorl by a subsutural band of square blotches and two rows of very close irregular dashes; anterior one largest. Protoconch white, aperture and columellar buff.

Animal. Foot and head of the live animal are white with a pattern of closely spaced radiating dark red lines.
forming stripes on the siphon with a white ring on its top.
Anatomy and radula could not be studied.

Discussion. At supraspecific level, this species is placed in *Lyria* s.s. of which characteristics are: Protoconch small, last whorl most often large, species variable, from smooth to axially ribbed, glossy or dull. No thick columellar callus.
L. grandidieri differs from the others by its plain buff colouration, faint pattern and wide low ribs.
Other species of the subgenus *Lyria* s.s. living in the same part of the Indopacific region are *Lyria (Lyria) cassidula* (Reeve,1849); *Lyria (Lyria) deliciosa deliciosa* (Montrouzier,1859); *Lyria (Lyria) habei* Okutani,1979; *Lyria (Lyria) insignata* Iredale,1940; *Lyria (Lyria) laseroni* (Iredale,1937); *Lyria (Lyria) nucleus* (Lamarck,1811) and *Lyria (Lyria) pallidula* Habe, 1962.
All have smaller protoconch, numerous narrow axial ribs on the first whorls, a rich spiral pattern on a glossy surface and a different columellar plaits structure often reduced to the three anterior ones
Its close relative is *Lyria (Lyria) guionneti* Poppe, 2001, which shares identical characters such as the shape of the protoconch, deep suture, general outline and columellar plaits-structure. The bigger size and its smooth surface with a richly coloured pattern exclude any confusion.

Remarks. The average size of adult specimens is around 35 mm in length. Some specimens are larger as it appears by a fragment with the extrapolated size of 45 mm. *L. guionneti* and *L. grandidieri* differ slighty from the other species of the subgenus *Lyria* s.s.. They can be considered temporarily as forming a subgroup within this subgenus.

Etymology. The specific name honours Gilles Grandidier, the young captain of the boat *TUI2* whose deep dredgings yielded the type material herein described.

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I thank Vincent Crayssac who donated the type material of *L. grandidieri* to the MNHN, Paris, Philippe
Bouchet (Muséum national d'Histoire naturelle, Paris) for his constant support, Philippe Maestrati (MNHN, Paris) and Guido Poppe, Belgium for their data processing help.

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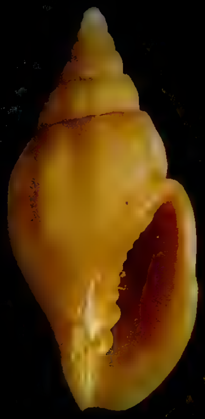
Plate 2 (Figs 1-7)
1-4. ***Lyria (Lyria) grandidieri***
1. Paratype 2. 27.4 x 13.1 mm, ventral view; 2. Holotype. 37.0 x 16.1 mm, ventral view; 3. Holotype, dorsal view; 4. Paratype 2, dorsal view.
5-6. *Lyria (Lyria) guionneti* Poppe, 2001. 47.0 mm.
7. Detail of the spire of *Lyria (Lyria) grandidieri.*



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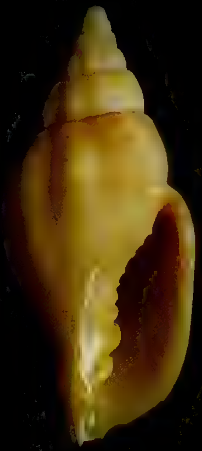

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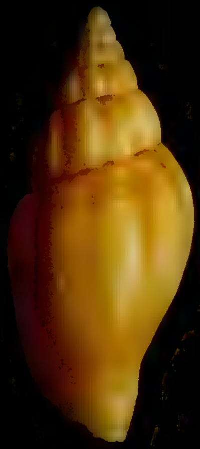

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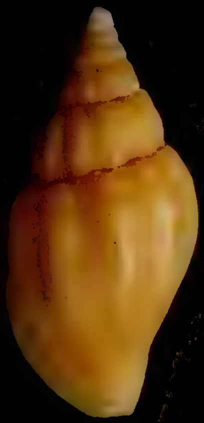

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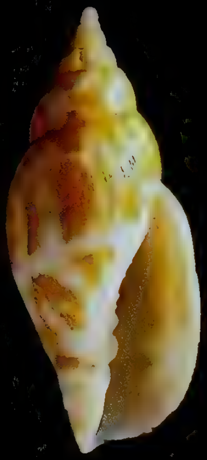

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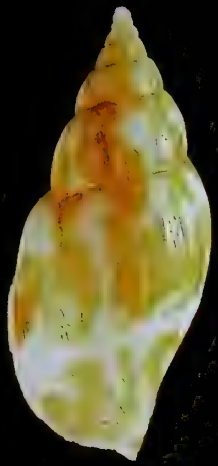

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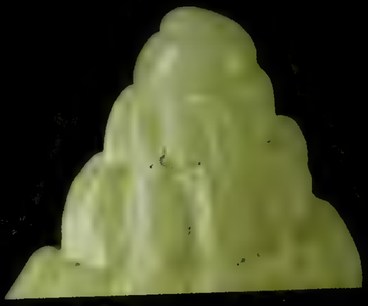

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Description of a new muricopsine species (Gastropoda : Muricidae) from Martinique, Lesser Antilles

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KEYWORDS. Western Atlantic, Lesser Antilles, Martinique, Gastropoda, Muricidae, *Favartia*, new species.

ABSTRACT. Favartia *paulmieri* n.sp. was collected in 40-70 m and is here described for the first time. It is compared with *F. glypta* (Smith, 1938), *F. levicula* (Dall, 1889) and *F. minirosea* (Abbott, 1954).

INTRODUCTION

About six or seven years ago, Gérard Paulmier, France, who collected shells in Martinique sent me some muricids for identification. After having examined all his material and having compared it with numerous specimens, only one specimen remained without any appropriate name. Searching for additional specimens during all these years was unsuccesful. It is here described as new.

Text conventions (after Merle, 1999 and 2001).

IP: Infrasutural primary cord (primary cord on shoulder).
adis: Adapical infrasutural secondary cord (adapical to IP).
abis: Abapical infrasutural secondary cord (abapical to IP, between IP and P1).
P1 : Shoulder cord.
P2-P6: Primary cords of the convex part of the teleoconch whorl.
s2: Secondary cord of the convex part of the teleoconch whorl between P1 and P2.
s5: Secondary cord of the convex part of the teleoconch whorl between P5 and P6.
ADP: Adapical siphonal primary cord.
MP: Median siphonal primary cord.

SYSTEMATICS

Family **MURICIDAE** Rafinesque, 1815
Subfamily **MURICOPSINAE** Radwin & D'Attilio, 1971
Genus ***Favartia*** Jousseaume, 1880
Type species, by original designation : *Murex breviculus* Sowerby, 1834, Recent, Indo-West Pacific.

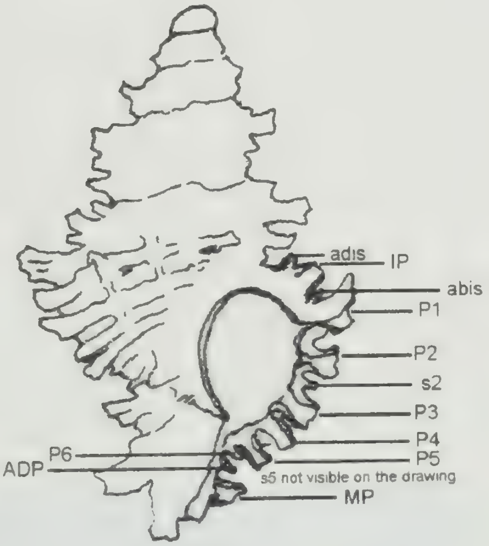

Fig. 1. Spiral sculpture of *Favartia paulmieri* n.sp.

Favartia paulmieri n.sp.

Figs 1-4

Type material. Martinique, insular shelf, 40-70 m, holotype 8.6 x 5.3 mm, MNHN.

Description. Shell of 8.6 mm in length, spinose, lightly built. Spire high, with 1 ½ protoconch whorls, and 4 ¼ broad, angulate, weakly spinose teleoconch whorls. Suture impressed. Protoconch large, whorls rounded, smooth. Terminal varix thin, weakly curved. Axial aculpture of teleoconch whorls consisting of weak, narrow varices: first to third whorl with 7 varices, last whorl with 5 varices. Spiral sculpture of high, squamous cords : first whorl with 3 visible cords (P1, P2, P3), second with IP, P1, P2, s2, P3, last whorl with adis, IP, abis, P1, P2, s2, P3, P4, P5, s5, P6, ADP, MP. Varices producing short, open, frondose spines at intersection of spiral cords. Presence of 5 spines on varices of last whorl. Shoulder spine (P1) broadest, approximately twice the breadth of P2-P5.

Aperture small, roundly-ovate. Columellar lip flaring, smooth, weakly adherent at adapical extremity. Anal notch indistinct. Outer lip erect, smooth within. Siphonal canal short, abaperturally recurved, narrowly open, with frondose, short, open spine; ADP narrow, short, MP broad, large.

Shell white.

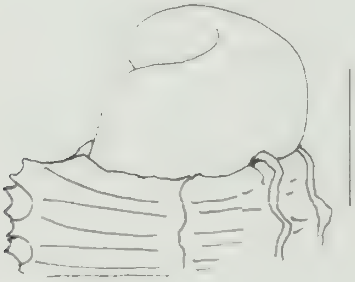

Fig. 2. Protoconch of *F. paulmieri* n.sp.
Scale bar: 0.5 mm

Remarks. The subfamily Muricopsinae of the western Atlantic was revised by Vokes (1994), who commented, and illustrated both Recent and fossil species. Three *Favartia* species are worth to be compared with *F. paulmieri* n.sp.

From *F. glypta* (Smith, 1938) it differs in its more fragile shell with fewer, narrower, lower, more widely spaced spiral cords, a shorter siphonal canal, and fewer varical spines. From *F. levicula* (Dall, 1889), a species with a somewhat similar shaped shell, *F. paulmieri* differs in having apparent spiral cords between the varices of the last whorl, and chiefly, in having a paucispiral, globose protoconch compared to the conical protoconch of *F. levicula*, consisting of 3.5 whorls. From *F. minirosea* (Abbott, 1954) (Fig. 5), *F. paulmieri* n.sp. differs in its more angulate, larger shell relative to the number of teleoconch whorls, in its higher, and less numerous axial varices with longer spines, and in the quasi-absence of spiral threads, *F. minirosea* having numerous spiral threads covering the whole shell.

Etymology. Named after Gérard Paulmier (Monteaux, France), who provided the holotype.

ACKNOWLEDGEMENTS

I am very grateful to Gérard Paulmier, Monteaux, France, for giving me the opportunity to examine this material and for the gift of the holotype. Thanks also to Emily H. Vokes (Professor Emeritus, Tulane University, Philadelphia, USA) for her comments and material given a few years ago.

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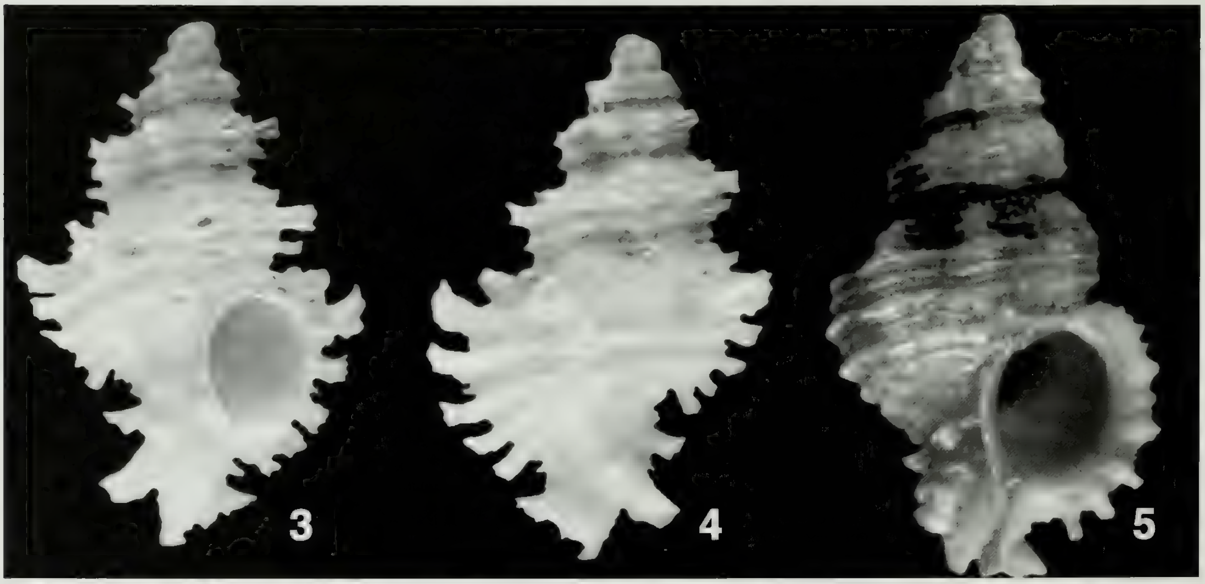

Figures 3-4. *Favartia paulmieri* n.sp. Martinique, insular shelf, 40-70 m, 8.6 mm, holotype MNHN; **5.** *F. minirosea* (Abbott, 1954). Isla de Utila, Islas de La Bahia, Honduras, coll. R. Houart, 7.8 mm.

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Keen, A.M. & Campbell, G.B. 1964. Ten new species of Typhinae (Gastropoda : Muricidae). *The Veliger* 7(l): 46-57.

Powell, A.W.B. 1979. *New Zealand Mollusca. Marine, land and freshwater shells.* William Collins Publishers Ltd: xiv + 500 pp

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The paper will be in accordance with the rules of the *International Code of Zoological Nomenclature* (Fourth edition)

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References, in alphabetic order, should be given in the following form (titles of journals should not be abbreviated):

Keen, A.M. & Campbell, G.B. 1964. Ten new species of Typhinae (Gastropoda : Muricidae). *The Veliger* 7(l): 46-57.

Powell, A.W.B. 1979. *New Zealand Mollusca. Marine, land and freshwater shells.* William Collins Publishers Ltd: xiv + 500 pp.

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Vie de la Société – Life of the Society

(suite)

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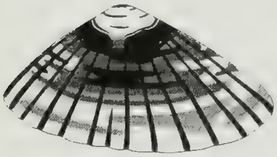
VIE DE LA SOCIETE LIFE OF THE SOCIETY



Pêches en Vendée et en Afrique du Sud

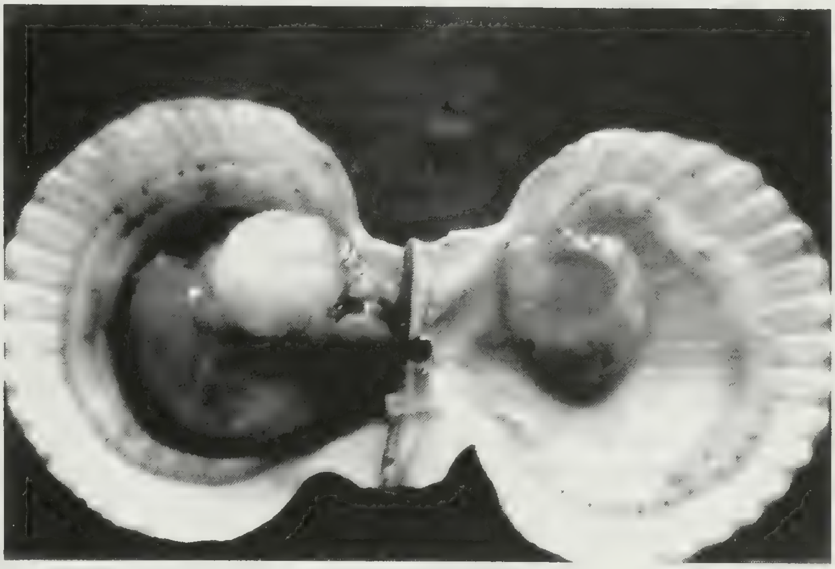
Jeannine et René Masson

1. Pour commencer : la Vendée

Au cours d'une escapade en Vendée Poitou, dont le but du voyage ne concernait pas la recherche de coquillages, nous avons été amenés à sortir quelques fois du groupe de nos compagnons de voyage, pour nous livrer à notre passion favorite.

Qui ne connaît les îles de Ré et Noirmoutier (ex-îles, puisque depuis quelques lustres, ces terres sont reliées au continent par un pont) ?

A l'île de Ré, nous avons trouvé en bord de mer un *Aequipecten opercularis* sur lequel avait élu domicile un *Crepidula fornicata* : pas étonnant puisque ces mollusques se nourrissent de plancton et profitent de l'adhérence à d'autres mollusques pour prélever une partie de leur nourriture.



Acquipecten opercularis (Linné, 1758)

Saint-Martin-de-Ré :

Aequipecten opercularis (Linné, 1758) figure dans la famille des Pectinidae –
Sous-famille : Chlamydinae
Tribu : Aequipectinini
Genre : Aequipecten

De nombreuses espèces de cette famille peuvent nager en ouvrant et en fermant brusquement les valves.

- Helix aspersa MUller, 1774 Sur le tronc d'un arbre
  Famille : Helicidae

Saint-Jean-de-Monts :

- *Chamella striatula* (da Costa, 1778)
  Famille : Veneridae
  Sous-famille : Chioninae
  Genre : Chamella

- *Cerastoderma edule* (Linné, 1758)
    - Famille : Cardiidae
    - Sous-famille : Laevicardiinae
    - Genre : Cerastoderma
- *Mactra corallina* (Linné, 1758) Forme Stultorum
    - Famille : Mactridae
    - Sous-famille : Mactrinae
    - Genre : Mactra

- *Crepidula fornicata* (Linné, 1758)
    - Famille : Calyptraeidae
    - Genre : Crepidula

- *Tellina tenuis* da Costa, 1778
    - Famille : Tellinidae
    - Sous-famille ; Tellininae
    - Genre : Tellina
    - Sous-genre : Angulus

- *Donax Vittatus* da Costa, 1778
    - Famille : Donacidae
    - Genre : Donax
    - Sous-genre : Cuneus

Passage du Gois (Noirmoutier) :

Venerupis Cornigata (Montagu, 1853)
    Famille : Veneridae
    Sous-famille : Tapeinae
    Genre : Venerupis
    Sous-espèce : Pullostra

- *Scrobicularia Plana*
    - Famille : Semelidae
    - Sous-famille : Scrobiculariinae

2. Pour continuer : l'Afrique du Sud

De notre périple en Afrique du Sud (40 fois la superficie de la Belgique), nous retiendrons la diversité des paysages, les fleurs multiples dont la PROTEA est l'emblème national, les côtes océanes, sauvages où déferlent des vagues successives d'une grande intensité.

Dès l'entame du trajet dans le parc Kruger, notre car s'est arrêté parce que la route était "traversée" par un gastéropode imprudent ! Je me suis empressé de prendre la photo qui ne me satisfait pas étant trop éloigné de l'animal intrépide. Il n'était évidemment nullement question de quitter notre habitacle, la route étant fréquentée par des animaux ... sauvages. Nous avons pu observer : éléphants, grands et petits, zèbres, diverses antilopes, girafes et surtout un léopard (au repos) que l'on rencontre rarement pendant la journée, celui-ci étant chasseur nocturne.

A Malenane, à la sortie du Parc Kruger, nous avons assisté, dans le jardin du lodge aux "ébats" (quel grand mot) amoureux d'un couple d'*Achatina fulica*. Le temps de prendre quelques clichés et c'était la fin de leur rêve. La séparation se fit en douceur, l'un restant sur place, le partenaire s'en allant lentement.

- *Achatina fulica* Bowdich 1822
    - Famille : Achatinidae

Grandes marées de l'année 2003

Christiane DELONGUEVILLE et Roland SCAILLET

C'est désormais devenu une tradition de communiquer chaque année les coefficients des grandes marées (> 100) calculés à Brest. En 2003, rien de bien spectaculaire ! Les deux plus grandes marées se situeront en mars et en avril (coefficient maximum de 114).

Coefficients (> 100) des pleines mers à Brest

(les marées basses correspondantes sont donc particulièrement importantes.)

Janvier	-	-
Février	Mardi 18	101 - 103
	Mercredi 19	105 - 104
	Jeudi 20	103 - 100
Mars	Mardi 18	100 - 106
	Mercredi 19	110 - 113
	Jeudi 20	114 - 113
	Vendredi 21	101 - 106
	Samedi 22	101 - (93)
Avril	Mercredi 16	103 - 109
	Jeudi 17	112 - 114
	Vendredi 18	114 - 113
	Samedi 19	109 - 104
Mai	Jeudi 15	(99) - 103
	Vendredi 16	106 - 107
	Samedi 17	107 - 105
	Dimanche 18	102 - (97)
Juin / Juillet	-	-
Août	Vendredi 29	(98) - 100
	Samedi 30	101 - 100
Septembre	Vendredi 26	100 - 104
	Samedi 27	107 - 109
	Dimanche 28	109 - 107
	Lundi 29	104 - (99)
Octobre	Samedi 25	102 - 107
	Dimanche 26	109 - 110
	Lundi 27	110 - 107
	Mardi 28	103 - (98)
Novembre	Dimanche 23	(97) - 101
	Lundi 24	104 - 105
	Mardi 25	104 - 102
Décembre	-	-

Ne faisons cependant pas trop grise mine… bonne pêche à pied quand même !

REFERENCE :

Annuaire des Marées pour l'année 2003 - Tome I - Ports de France - *SHOM (Service Hydrographique et Océanographique de la Marine)* - Paris - 192 pp.

Les données reprises dans cet article peuvent également se retrouver sur notre site Internet :

http://www.sbm.be.tf

Achatina fulica Bowdich, 1822

Dans ce même parc, étaient également présents des

- *Helix aspersa* Muller 1774
  Famille : Helicidae

Nous devons signaler que dans le parc Kruger, il est interdit aux cars de quitter les routes carrossables. Dans le parc de Lhulhuwe, grâce à notre véhicule tout terrain (6 personnes par véhicule) et à un guide local, nous avons emprunté des pistes poussiéreuses et avons admiré des éléphants, buffles, zèbres, oryx ... Un regret cependant, nous n'avons pas rencontré le rhinocéros lequel figure sur la liste des cinq "Grands" (Lion - Eléphant - Buffle - Rhinocéros et Léopard).

Au cours d'une ballade sur le lac de la Réserve Santa Lucia, nous avons assisté à la baignade de nombreux hippopotames tandis que sur les berges et dans l'eau, des crocodiles du Nil de quelque 7 mètres de longueur faisaient penser à du bois mort ....

Continuant notre circuit, nous avons pu marcher le long de la côte de Durban. Dès le lever du soleil, j'ai quitté la chambre pour rejoindre la plage à marée basse (le hasard fait bien les choses !) et j'ai trouvé

- *Aulacomya ater* (Molina, 1782) Forme Striata
  Famille : Mytilidae
  Sous-famille : Mytilinae

- *Perna perna* Linné, 1758
  Famille : Mytilidae
  Sous-famille : Mytilinae
  Genre : Perna

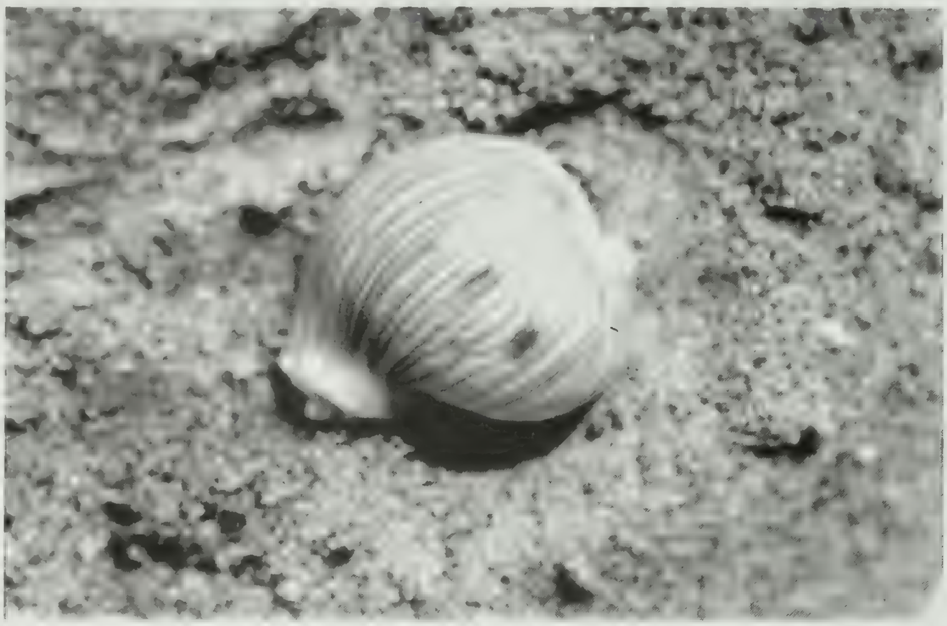
- *Thais buffo* (Lamarck, 1822)
  Famille : Muricidae
  Sous-famille : Rapaninae
  Genre : Thais

- *Patella natalensis* (Krauss, 1848)
  Famille : Patellidae
  Genre : Patella

- *Haliotis assinina* (Linné, 1758)
  Famille : Haliotidae
  Genre unique : Haliotis

- *Donax (Grammatadonax) madagascariensis* Wood, 1828
  Famille : Donacidae
  Genre : Donax
  Sous-genre : Grammatadonax

- *Melapium lineatum* (Lamarck 1822)
  Famille : Strepturidae
  Genre : Melapium



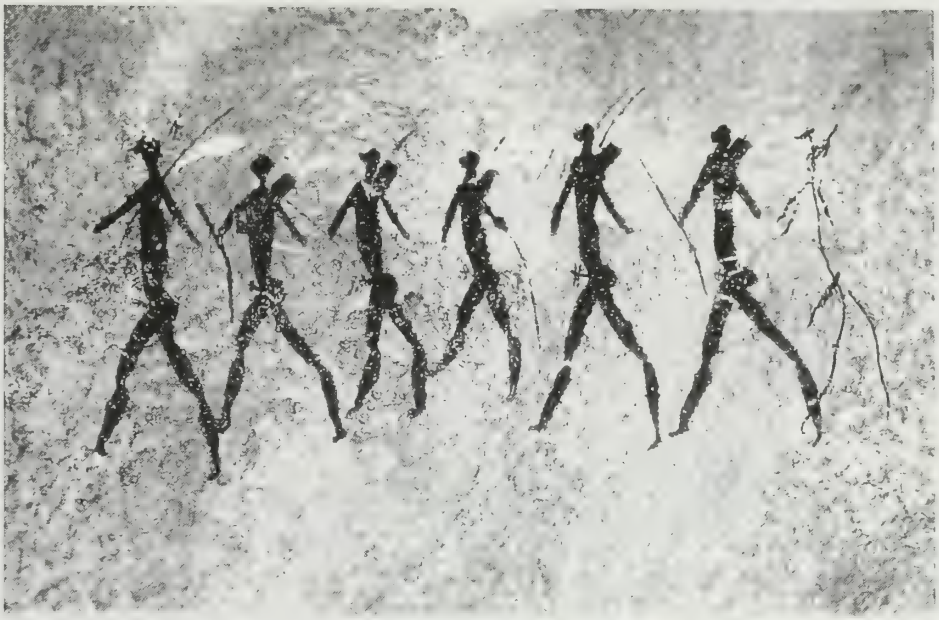
Melapium lineatum Lamarck, 1822

Lors de notre passage à Pietermaritzburg, nous avons visité le Natal Museum, consacré à l'histoire naturelle et à l'ethnologie. La façade du musée s'orne d'insectes géants qui annoncent sa section d'histoire naturelle, une des plus importantes d'Afrique du Sud.

Dans une jolie vitrine comportant des coquillages d'Afrique du Sud, nous avons remarqué entr'autres :

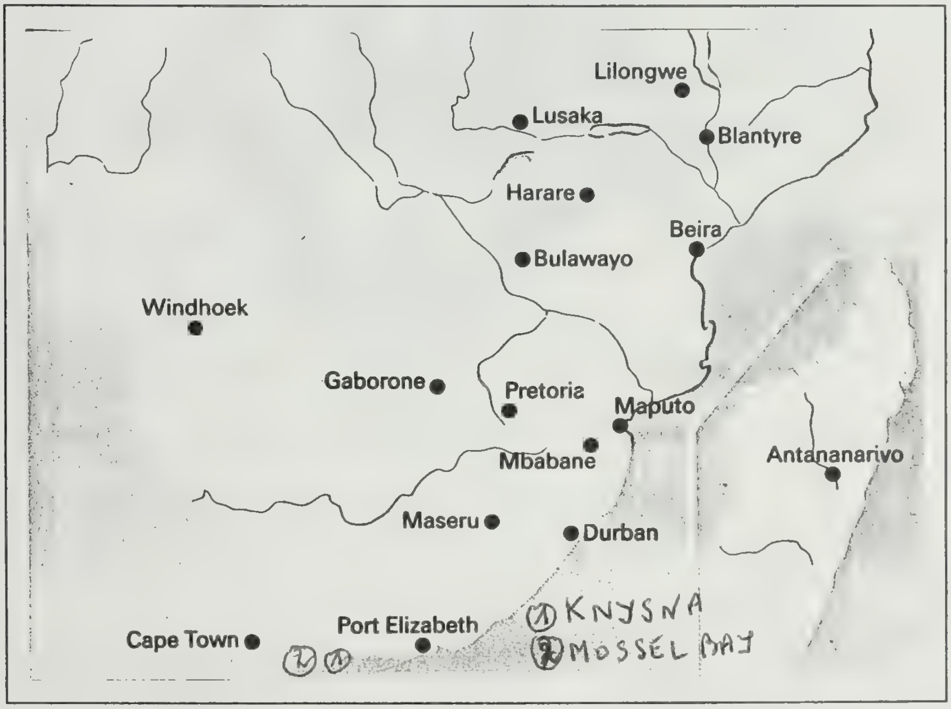
Conus tesselatus
Conus natalis
Conus tinianus
Charonia lampas pustulata
Turbo sarmaticus
Murex brevispina
Ovula ovum
Mitra stictica
Trivia aperta
Turbo cidaris natalensis

Vitrine au Musée de PIETERMARITZBURG



Peinture rupestre au Musée de PIETERMARITZBURG

Nous voici à Knysna où plage et rochers me tentent ! Je ne partage pas le repas de midi, composé d'un immense buffet à creuser l'appétit ! Il faut choisir, ou je me gave ou je pêche. Le choix est heureux : j'ai trouvé


Lilongwe
Lusaka
Blantyre
Harare
Beira
Bulawayo
Windhoek
Gaborone
Pretoria
Maputo
Mbabane
Antananarivo
Maseru
Durban
Cape Town
Port Elizabeth
② ①
① KNYSNA
② MOSSEL BAY

- *Diloma sinensis* (Gmelin, 1791)
- *Diloma tigrina* (Chemnitz)

Famille : Trochidae
Sous-famille : Trochinae
Tribu Gibbulini
Genre Diloma

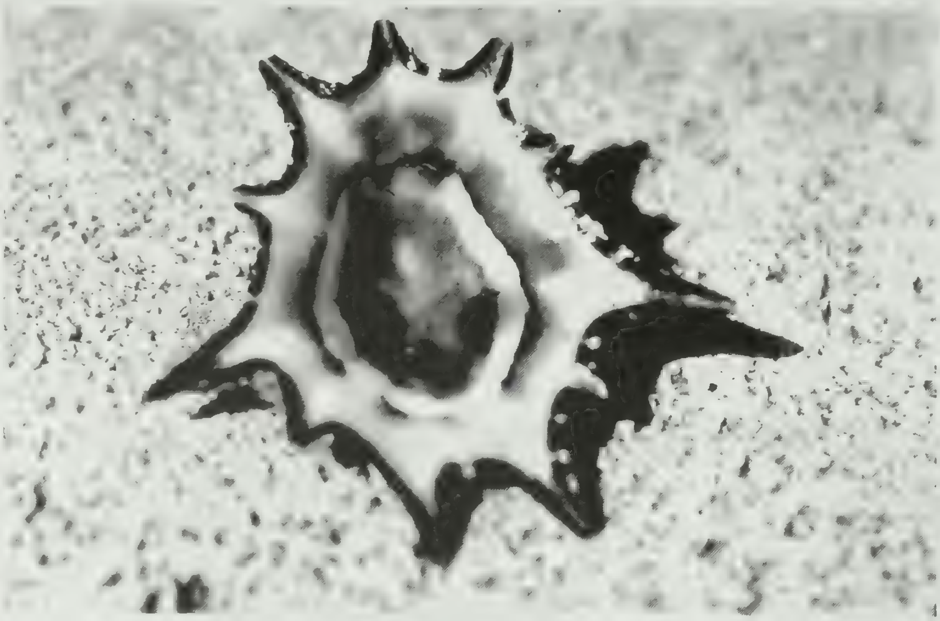
- *Burnupena delandii* (Kiener)
- *Burnupena papyracea* cincta (R~ding, 1798
  Famille : Buccinidae
  Sous-famille : Buccininae
  Genre : Burnupena

A Mossel Bay, non loin de Knysna, nous avons récolté

- *Diloma tabularis* Krauss
- *Diloma variegata* (Anton)
  Famille : Trochidae
  Sous-famille : Trochinae
  Tribu : Cibbulini
  Genre : Diloma

- *Patella miniata* Born 1778

- *Patella longicosta* Lamarck, 1819
  Famille : Patellidae
  Genre : Patella



Patella longiscosta Lamarck, 1819

- *Cymatium doliarium* (Linné, 1758)
  Famille : Ranellidae
  Sous-famille : Cymatinae
  Genre : Cymatium

- *Crepidula porcellana* Lamarck, 1799
  Famille : Calyptraeidae
  Genre : Crepidula

- *Thais capensis* (Petit)
  Famille : Muricidae
  Sous-famille : Rapaninae
  Genre : Thais

Cymatium doliarium (Linné, 1767)

- *Haliotis spadicae* Donavan, 1808
    Famille : Haliotidae
    Genre : Haliotis

Sur le parcours du Cap de Bonne Espérance, nous avons fait un arrêt à Boulders Bay où une colonie impressionnante de manchots se tenaient prêts à "nous serrer la palme". Vous voyez ce que nous voulons dire pour des pêcheurs à pied. Ne croyons pas que le Cap de Bonne Espérance est le point extrême du continent africain, mais non, il s'agit du Cap des Aiguilles qui forme l'extrême pointe méridionale. Ce sont les navigateurs portugais qui le baptisèrent Agulhas car à ce point très précis, l'aiguille de la boussole indique le Nord parfait.

Ce merveilleux voyage se termine à Cape Town où il nous fut possible, malgré des vagues intempestives, d'enlever de leur substrat rocheux, quelques belles patelles

- *Patella oculus* Born, 1778
- *Patella granatina* Linné, 1758
- *Patella granularis* Linné, 1758
    Famille : Patellidae
    Genre : Patella

- *Helcion dunkeri* Krauss, 1848
- *Helcion pruinosis* (Krauss, 1848)
    Famille : Patellidae
    Genre : Helcion

- *Chiton nigroviscens* de Blainville, 1825
    Famille : Chitonidae
    Sous-famille : Chitoninae
    Genre : Chiton

- *Acanthochitonina Garnoti* de Blainville, 1825
    Famille : Acanthochitonidae
    Sous-famille : Acanthochitoninae
    Genre : Acanthochitonina

- *Siphonaria capensis* Quoy et Gaimard, 1833
    Famille : Siphonariidae
    Genre : Siphonaria

- *Fissurella (Amblychilepas) scutella* (Gmelin, 1791)
    Famille : Fissurellidae
    Sous-famille : Fissurellinae
    Genre : Fissurella
    Sous-genre : Amblychilepas

Petit troupeau de manchots se dandinant
pour venir nous serrer la "palme"
(Plage de Boulders)

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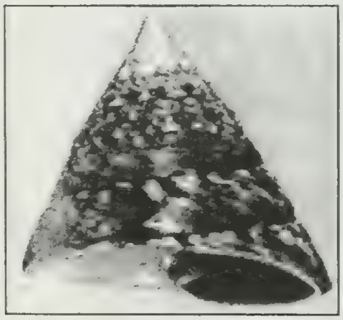
Sur Internet :

http://www.sbm.be.tf

Pour mieux nous connaître:



les réunions et les conférences
les publications (NOVAPEX)
les excursions
la bibliothèque
les expositions et les bourses
le conseil d'administration
devenir membre (membership)

malacologie et mollusques (NEW)
le dictionnaire de malacologie

quelques liens

les marées du 21ème siècle (2002)

Une récolte facile.

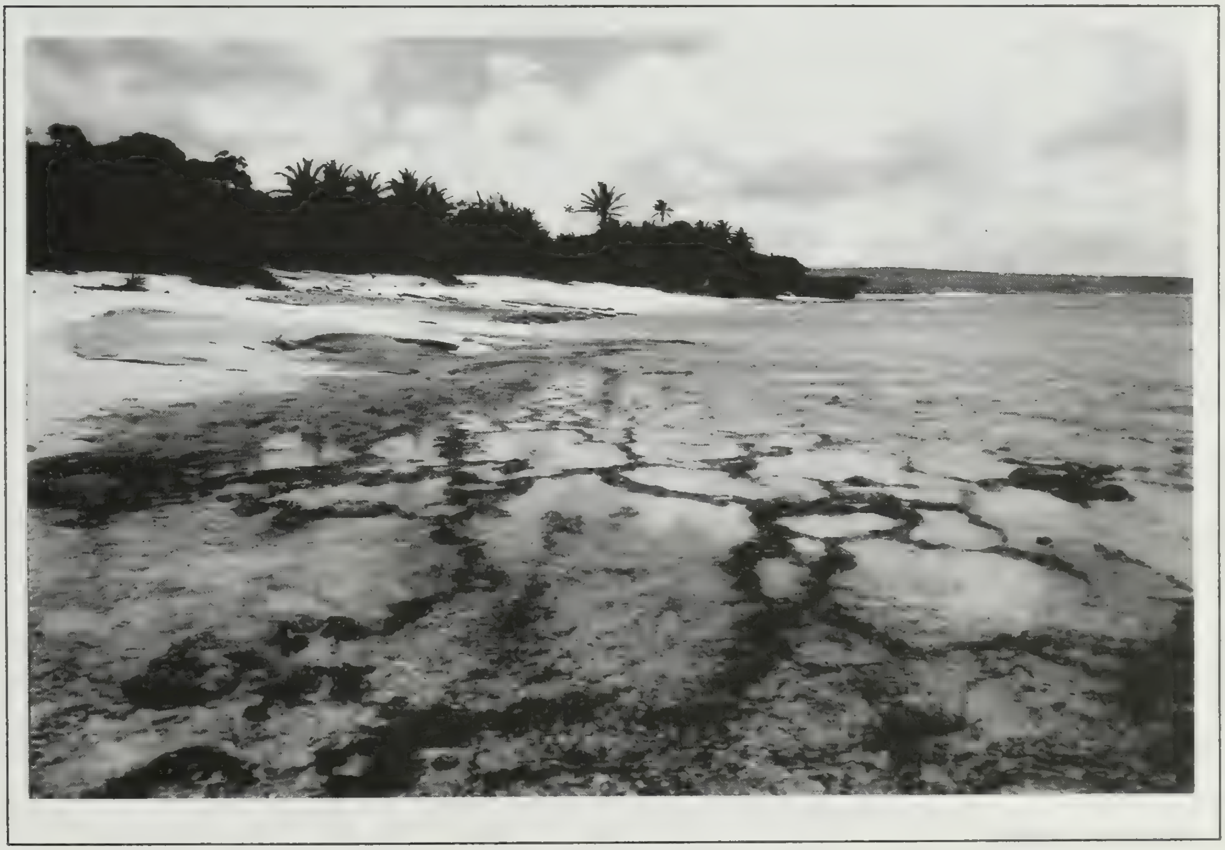
Gérard Vatel

En vacances pendant un mois en Nouvelle-Calédonie, j'ai eu l'occasion de trouver quelques coquillages que tout un chacun peut obtenir sans difficultés majeures, car j'ai pratiqué la pêche à pied et l'apnée dans très peu d'eau. Après un bref séjour à Nouméa, histoire de décompresser, je me suis rendu directement aux îles Loyauté. A **Ouvea**, j'ai logé trois jours chez l'habitant (un pêcheur retraité) Dans ce magnifique atoll, avec ses 25 km de plage, l'accueil fut chaleureux et le dépaysement total.

Spécimens trouvés :

(Je précise que je n'ai prélevé que le strict minimum)
Nerita plicata Linné, 1758 : très commune entre Wadrilla et Saint Joseph.
Nerita polita Linné, 1758 : très commune entre Wadrilla et Saint Joseph.
Nerita albicilla Linné, 1758 : très commune entre Wadrilla et Saint Joseph.
Nerita fasciata Rödin, 1798 : une seule entre Fayaoué et Saint Joseph.
Neocancilla papilio Link, 1807 : une seule à Fayaoué (de nuit)
Engina contracta Reeve, 1846 : très commune près du wharf
Pyrene mendicaria Linné, 1758 : commune près du wharf.
Spirula spirula Linné, 1758 : beach, plage de Fayaoué.
Bulla ampula Linné, 1758 : beach, plage de Fayaoué.
Tridacna maxima Linné, 1758 : fresh dead, Hwakaïo.
Cypraea mauritana Linné, 1758 : vendeur local (environ 3 euro)

Puis ce fut trois autres journées à **Lifou**, la plus importante des îles Loyauté par sa superficie (1150 km$^{2)}$ et son statut administratif. Superbes falaises, forêts tropicales, flore très diversifiée, et surtout des fonds coralliens de toute beauté. Il y en a pour tous les goûts ! Le crabe cocotier et le bougna furent un régal …



Mu, Baie de Wadora (Lifou) – lieu pour *C. ebraeus*

Spécimens trouvés :
Lambis lambis Linné, 1758 : très commun, sur sable, par un mètre de fond, Mu.
Lambis truncata Humphrey, 1786 : commun, (le premier, quelle joie) Easo.
Mitra mitra Linné, 1758 : une seule trouvée sur sable par 0,50 m de fond, à Mu, baie de Wadra.
Conus ebraeus Linné, 1758 : une multitude ! Mu, Easo, Drueulu.
Conus sponsalis Hwass, 1792 : trois à Drueulu, sur roches.
Natica euzona Recluz, 1844 : deux à Mu, baie de Wadra.

J'ai terminé par trois nouvelles journées à **Maré**, l'île qui m'a le plus marqué par l'aspect sauvage de ses criques et de ses lagons : l'authenticité à l'état pur !
Les barrières coralliennes étant proches (100 à 150 m.) cela m'a permis d'y accéder aisément pour en découvrir toutes les richesses.

Maré, Yedjelé, baie de Wabao

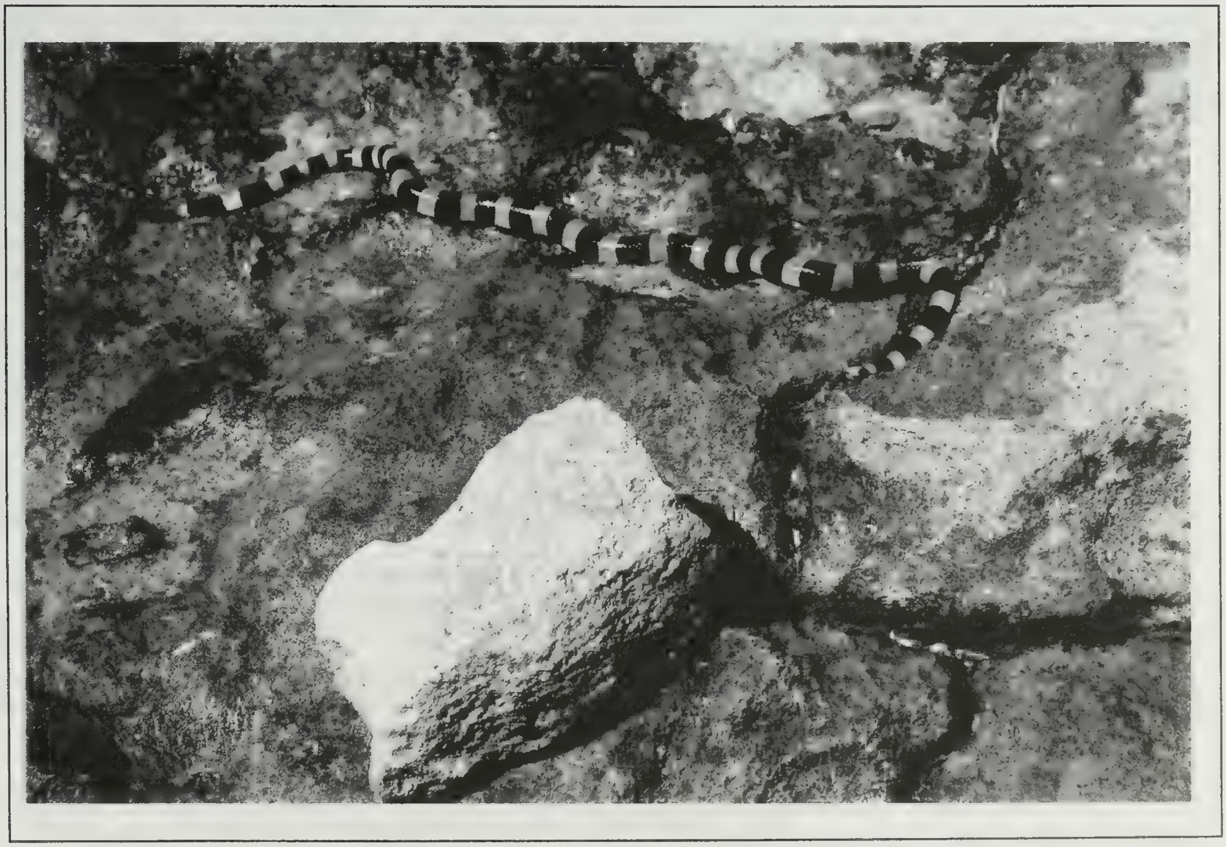
Spécimens trouvés :
Lambis lambis Linné, 1758 : très commun, Yedjelé, sur sable, (1 à 2 m.)
Lambis truncata Humphrey, 1786 : très commun, Ydjelé, sur sable, (1 à 2 m.)
Conus plicarius Hwass, 1792 : commun, Yedjelé, baie de Wabao.
Conus arenatus Hwass, 1792 : très commun, Yedjelé, baie de Wabao, sur sable, (1 m.)
Conus lividus Hwass, 1792 : très commun, Yedjelé, baie de Wabao, sur sable, (1 m.)
Conus sanguinolentus Quoy et Gaimard, 1834 commun, Yedjelé, baie de Wabao sur sable, (1 m.)
Conus eburneus Hwass, 1792 : très commun, Yedjelé, baie de Wabao, sur sable, (0,50 m.)
Conus striatus Linné1758 : un seul spécimen trouvé, Yedjelé, sur sable, (3 m.)
Conus textile Linné : un seul spécimen trouvé, Yedjelé, sur sable, (1 m.)
Conus tessulatus Born, 1778 : un seul spécimen trouvé, Yedjelé, sur sable, (0,50 m.)

Retour sur la grande terre ! J'ai prospecté l'**anse Vata** (la plage fréquentée par les Nouméens et les touristes, avec celle de la baie des Citrons) ainsi que ses alentours. Lors de mon arrivée de Métropole, cette plage m'avait semblé très belle mais, après avoir vu celles des Loyauté, elle le paraît beaucoup moins.

Spécimens trouvés :
Cypraea annulus Linné, 1758 : sous roches, 1 mètre, eau peu claire.

Cypraea moneta Linné, 1758 : sous roches, 1 mètre, eau peu claire.
Cypraea errones Linné, 1758 : sous roches, 1 mètre, eau peu claire (en colonie de trois à quatre spécimens de petite taille).
Bulla ampula Linné, 1758 : commune, fraîchement morte, nuit.
Lunella cinerea Born, 1778 : deux spécimens trouvés, anfractuosités de roches, nuit.
Conus marmoreus Linné, 1758 : fresh dead, marée basse, 0,50 mètre, nuit.
Conus ebraeus Linné, 1758 : trois spécimens trouvés, assez grands, calcairisés, nuit.
Conus catus Hwass, 1792 : deux spécimens trouvés, sable vaseux, marée basse, nuit.
Cymatium muricinum Röding, 1798 : commun.
Polinices tumidus Swainson, 1840 : petits et gros spécimens.
Nassarius glans Linné, 1758 : un seul spécimen trouvé, marée basse, nuit.
Thais armigena Link, 1807 : commun, marée basse, nuit.
Thais aculeata Deshayes, 1844 : commun, marée basse, nuit.
Thais ruberosa Röding, 1798 : commun, marée basse, nuit.

J'ai visité aussi l'**île aux Canards**, petit îlot corallien et réserve marine, à cinq minutes en bateau-taxi, et j'ai trouvé, au-delà de la zone protégée :
Cypraea talpa Linné, 1758 : fraîchement morte, fine++, sur débris de corail et de sable, (2 mètres).
Cypraea moneta Linné, 1758 : sous roches (0,50 mètre).
Haliotis ovina Gmelin, 1791 : morte.
Tectus pyramis Born, 1778 : très commun.
Tectus niloticus Linné, 1767 : commun.
Vasum ceramicum Linné, 1758 : fonds sableux à herbier et petites roches.
Vasum turbinellus Linné, 1758.
Cymatium pileare Linné, 1758.
Coralliophilla neritoidea Link, 1807.
Nassarius distortus A. Adams, 1852.



Tricot rayé (*Laticanda colubrina*) – Ilôt Maitre

L'îlot Maître est à deux minutes à peine de l'île précédente, plus grande. J'y ai passé de bons moments.

Au hasard d'une promenade en palmes, masque et tuba, dans à peine deux mètres d'eau, en soulevant un bloc corallien, ma surprise fut grande d'y dénicher deux *Cypraea erosa* ainsi que deux *Cypraea humphreysi* avec leur splendide manteau rouge, parfaitement adultes. Sous un autre bloc, je suis tombé sur *Cypraea carneola*. Après avoir déposé mon « butin », je retournai à l'eau dans l'espoir de découvrir d'autres trésors… qui se révélèrent être deux boîtes de « Number one » (bière locale ! cf. illustration).

A maintes reprises, j'ai également eu l'occasion de voir des tricots rayés. Ce sont de jolis serpents marins venimeux, de couleur blanche et noire. J'ai, chaque fois, préféré les éviter, tout comme je l'ai fait pour les serpents mangeurs d'œufs (*Emydocephalus annulatus*) !

Autres spécimens trouvés :
Tectus fenestratus Gmelin, 1791.
Patella flexuosa Quoy et Gaimard, 1834 : très commune.
Chama pacifica Broderip, 1835 : très commun.
Nerita undata Linné, 1758 : grosses, sur roches.
Siphonaria atra Quoy et Gaimard, 1833.
Anadara scapha Linné, 1758.
Et aussi de très gros chitons que je n'ai pu identifier.

Etal de coquillages à Poindimié (Province Nord)

Poindimié (Province nord), petite bourgade de la côte est, fut également un autre but que je m'étais fixé, pour son immense lagon et ses sublimes récifs. J'ai pu me rendre compte que la coutume y est très présente.

Spécimens trouvés :
Cypraea eglantina Duclos, 1833 : fraîchement morte, par 2 mètres de fond.
Cypraea arabica Linné, 1758 : fraîchement morte, petits défauts, par –3 mètres.
Cypraea caurica Linné, 1758.
Cypraea teres Gmelin, 1791 : fraîchement morte, par -3 mètres.
Cypraea isabella Linné, 1758.
Cypraea vitellus Linné, 1758.

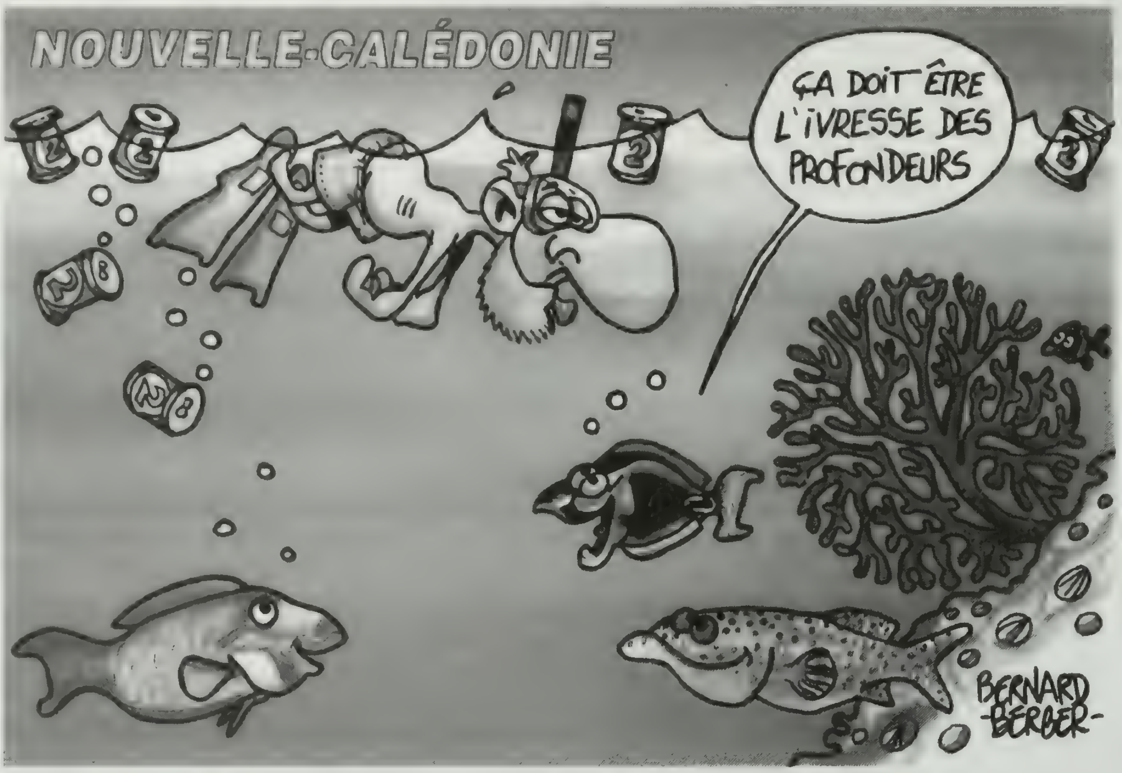
Cypraea lynx Linné, 1758.
Strombus gibberulus Linné, 1758 : commun.
Strombus luchuanus Linné, 1758 : très nombreux, sur fond vaseux.
Conus striatus Linné, 1758.
Conus geographus Linné, 1758 : (beach).
Conus leopardus Röding, 1798 : (beach)
Conus litteratus Linné, 1758 : (beach).

Piscine naturelle – Baie d'Oro [Roches] (Ile des Pins)

Je me suis ensuite reposé sur la très belle plage de Poé, près de Bourail (côte ouest) où j'ai quand même pu admirer un jolis *Conus marmoreus* d'environ huit centimètres dans son milieu de sables et d'algues.

Mon voyage s'est achevé par deux journées à l'**Ile des Pins**, un bel endroit mais assurément très touristique. Je m'y suis régalé de *bulines* (escargots terrestres).

Mes dernières prises :
(Toutes à la piscine naturelle, baie d'Oro, à marée basse)
Lambis lambis Linné, 1758.
Cypraea caputserpentis Linné, 1758 : roches volcaniques ou granitiques ?
Mitra stictica Link, 1807 : marée basse, petite poche d'eau, sable.
Drupa ricinus Linné, 1758 : sur roches.
Drupa grossularia Röding, 1798 : sur roches.
Cymatium nicobaricum Röding, 1798.
Cerithium nodulosum Bruguière, 1792 : deux, sur sable vaseux.
Conus miliaris Hwass, 1792 : sur roches.
Conus coffea Gmelin, 1791 : roches et sable.
Conus magus Linné, 1758 : petits défauts, très foncé, fraîchement more.
Strombus gibberrulus Linné, 1758 : très commun.
Strombus mutabilis Swainson, 1820 : commun, roches et sable.
Strombus plicatus Röding, 1798 : deux trouvés.


NOUVELLE-CALÉDONIE
ÇA DOIT ÊTRE L'IVRESSE DES PROFONDEURS
BERNARD BERBER

Ce voyage, riche en découvertes pas uniquement conchyliologiques, m'a paru bien court. Je ne saurais trop vous conseiller de l'entreprendre à votre tour.
Quant à moi, je dis : « A bientôt, Nouvelle-Calédonie », et « Otina younyutnui iöhnyi hë e ketre drai, Haeked » aux Iles Loyauté, c'est-à-dire « au revoir », en langues respectives d'Ouvéa, Lifou et Maré.

Références bibliographiques :

- B. Salvat, C. Rives, P. Revercé : "Coquillages de Nouvelle-Calédonie", Les Editions du Pacifique.
- J.C. Estival : "Cônes de Nouvelle-Calédonie et du Vanuatu", Les Editions du Cagou.

Sur Internet :
http://www.sbm.be.tf

Unique sur Internet : la construction d'un **dictionnaire de malacologie en français** !

La Société Belge de Malacologie
Le dictionnaire de malacologie
Définition des termes de malacologie

A B CD E F G H I J K L M N O P Q RS T U V W X Y Z

A

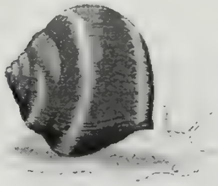
actinodonte
albinos
alliostrophie

E

écusson
endémique
équivalve epipodium
espèce type

N

néotype
nominal



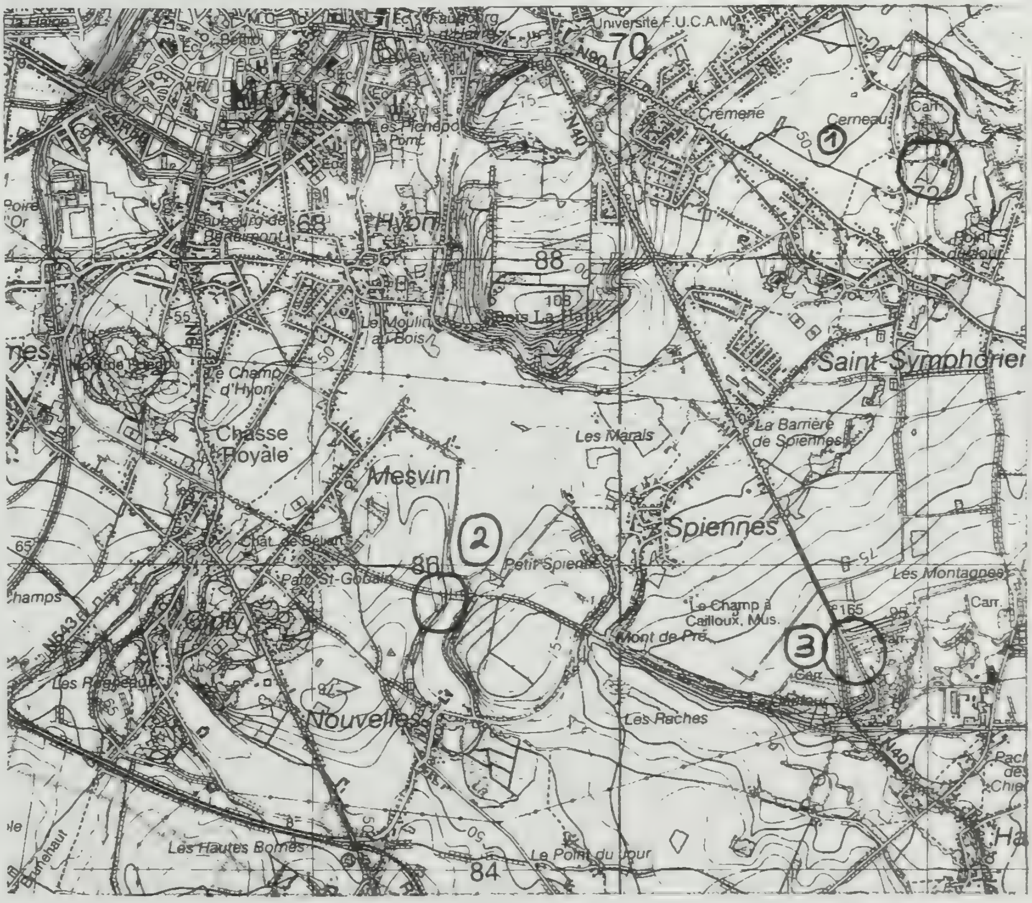
Excursion de la Société Belge de Malacologie le samedi 8 juin 2002 dans la région de Mons

Etienne Meuleman
(détermination par Edgard Waiengnier)

C'est avec leur bonne humeur habituelle que quelques malacologues (7 pour être précis) se sont réunis ce samedi 8 juin pour découvrir les richesses malacologiques de la région de Mons.

A peine arrivés, nous nous sommes dirigés vers notre premier lieu de récolte :
un sous-bois humide composé essentiellement de feuillus et quelques étangs difficiles d'accès. Le propriétaire nous attendait de pied ferme pour nous donner quelques tuyaux pour la récolte. Nous ne nous étendrons pas sur le débat entamé par notre hôte sur les « pour » et « anti-chasse » (aux animaux bien sûr). Je voyais déjà pointer un petit sourire chez certains en pensant que nous discutions de la présence ou non d'une chasse au dessus du lieu d'aisance dans nos maisons. Trève de plaisanteries, nous avons pu récolter une dizaine d'espèces dans cet espace naturel (voir tableau en annexe). Nous pouvons également noter la présence de nombreuses orchidées. Ce ne sont pas des mollusques, mais ne sommes-nous pas là également pour découvrir les richesses naturelles de notre pays?

Avant de prendre un repas bien mérité, nous avons visité un petit musée se situant à Mesvin: L'amusette. Ce musée adapté aux enfants, permet de découvrir de manière interactive l'eau dans tous ses états. Intéressés, un petite visite est organisée pour le public le dernier dimanche du mois après-midi (renseignements du lundi au vendredi de 15 à 17 heures au 065/33.82.33).


Université F.U.C.A.M.
70
Crèmerie
Cerneau
①
Hyon
68
88
Bois La Haut
Le Moulin au Bois
Le Champ d'Hyon
Chasse Royale
Mesvin
Les Marais
La Barrière de Spiennes
Saint-Symphorien
Spiennes
②
Petit Spiennes
Parc St-Gobain
Chât. de Bélian
Les Montagnes
Le Champ à Cailloux, Mus.
Mont de Pré
③
Nouvelles
Les Rèches
Les Hautes Bornes
Le Point du Jour
84
N40

Lieux de récoltes (Carte IGN Mons 45 Ech. : 1/50000)
Station 1 : Bois d'Havré (non loin du lieu dit : point du jour)
Station 2 : Nouvelles
Station 3 : Harmignies

Notre deuxième point de chute nous a conduit près du petit village de Nouvelles à quelques kilomètres de Mons. Là nos troupes se sont séparées. Une partie des participants sont montés sur le talus de la voie ferrée menant à des cimenteries. Quant aux plus courageux (Etienne et Xavier), ils n'ont pas hésité à plonger dans la Wampe, petite rivière coulant au bas du talus pour récolter quelques mollusques dulcicoles. Xavier, je ne connais pas ce nom là ! Un nouveau membre ? qui sait ? Xavier s'occupe de réserves naturelles dans la région. Il nous accompagnait pour découvrir les richesses locales et observer notre méthode de récolte et de détermination des mollusques.

Comme il nous restait un peu de temps, nous avons découvert la faune malacologique d'une pelouse calcaire sèche près d'Harmignies. Cette pelouse calcaire renferme une faune et flore spécifiques. Il était temps de s'y rendre, en effet, une partie de celle-ci a déjà été recouverte par divers remblais. Il est dommage de voir que l'on détruise encore de nos jours des sanctuaires naturels en voie de disparition.

Les poches pleines de coquilles, nous sommes rentrés chez nous, heureux je l'espère. Merci à toutes les personnes d'avoir fait le déplacement pour découvrir cette partie du Hainaut.

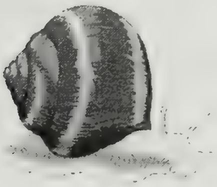
FAMILLE	**NOM**	**Station 1**	**Station 2**	**Station 3**
MOLLUSQUES TERRESTRES				
CLAUSILIIDAE	*Clausilia bidentata* (Ström, 1765)	x	x	
CLAUSILIIDAE	*Cochlodina laminata* (Montagu, 1803)	x		
ENDODONITIDAE	*Discus rotundatus* Fitzinger, 1833	x		
ENIDAE	*Ena obscura* (Müller, 1774)	x		
HELICIDAE	*Cepea nemoralis* (Linné, 1758)	x	x	x
HELICIDAE	*Helicilla intersecta* (Poiret, 1801)			x
HELICIDAE	*Helicella itala* (Linné, 1758)			x
HELICIDAE	*Helix pomatia* (Linné, 1758)	x		
HELICIDAE	*Monacha cantiana* (Montagu, 1803)	x		x
LIMACIDAE	*Arion rufus* (Linné, 1758)	x		
LIMACIDAE	*Limax maximus* (Linné, 1758)	x		
SUCCINEIDAE	*Succinea putris* (Linné, 1758)	x	x	
ZONITIDAE	*Oxychilus* sp.			x
ZONITIDAE	*Zonitoides* sp.	x		
MOLLUSQUES DULCICOLES				
ANCYLIDAE	*Ancylus fluviatilis* (Müller, 1774)		x	
HYDROBIIDAE	*Hydrobia* sp.		x	
LYMNAEIDAE	*Lymnaea auricularia* (Linné, 1758)		x	
SPHAERIIDAE	*Pisidium* sp.		x	

⇧ Station 1 - Bois d'Havré

Station 2 - Nouvelles ⇩

⇧ Harmignies (avec Yvonne, Marcel, Edgar et Xavier)

Succinea putris sur les orties ⇩



Quoi de neuf ?

Claude VILVENS et Etienne MEULEMAN

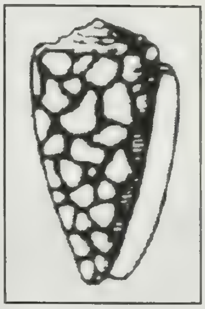
UNITAS
MALACOLOGICA

World Congress of Malacology

Perth, Western Australia
11–16 July 2004

15th International Congress of
UNITAS MALACOLOGICA

Triennial conference of the
MALACOLOGICAL SOCIETY
OF AUSTRALASIA

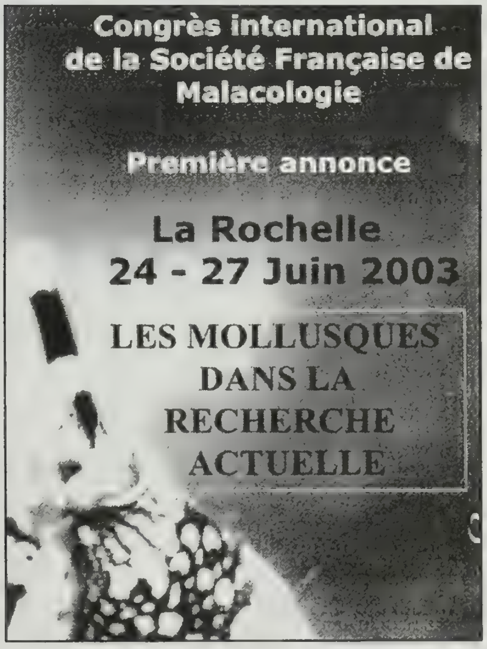


Pour plus d'informations :

Dr Fred E Wells
Western Australian Museum
1 Francis Street
Perth 6000, Western Australia

E-mail: **fred.wells@museurn.wa.gov.au**
Phone: 61-8-9427-2809
Fax: 61-8-9472-2882

XIIIième Congrès de la S.F.M.



Congrès international de la Société Française de Malacologie

Première annonce

La Rochelle
24 - 27 Juin 2003

LES MOLLUSQUES DANS LA RECHERCHE ACTUELLE

Le but de ce Congrès est de réunir des malacologistes avec des scientifiques de divers horizons, conduits à utiliser des mollusques dans un cadre de bio-indication ou de mise en valeur de leurs ressources. Les résumés courts seront distribués au début des sessions. Les résumés étoffés seront publiés dans les actes du Congrès. Les communications in extenso pourront être publiées à la demande de leurs auteurs, dans la revue Haliotis après acceptation par le comité de lecture et selon des modalités qui seront précisées dans la deuxième annonce (expédiée dans le courant du mois de novembre).

Communications et posters pourront se rapporter à 1 'un des deux grands thèmes qui suivent :

Les Mollusques comme bio-indicateurs
Ecotoxicologie, Biodiversité, Espèces invasives, Paléo-environnement, Mollusques et santé.

Les Mollusques et leurs ressources:
Pêche et aquaculture, Pharmacognosie.

-- Toute personne intéressée peut obtenir un folder d'annonce et d'enregistrement chez Claude Vilvens.

NOUVEAU NOUVEAU NOUVEAU NOUVEAU NOUVEAU NOUVEAU

Des nouvelles de la bibliothèque

Du nouveau du côté de la bibliothèque de la SBM ! En effet, depuis des années, un long travail d'encodage des articles disponibles à la bibliothèque a été effectué.

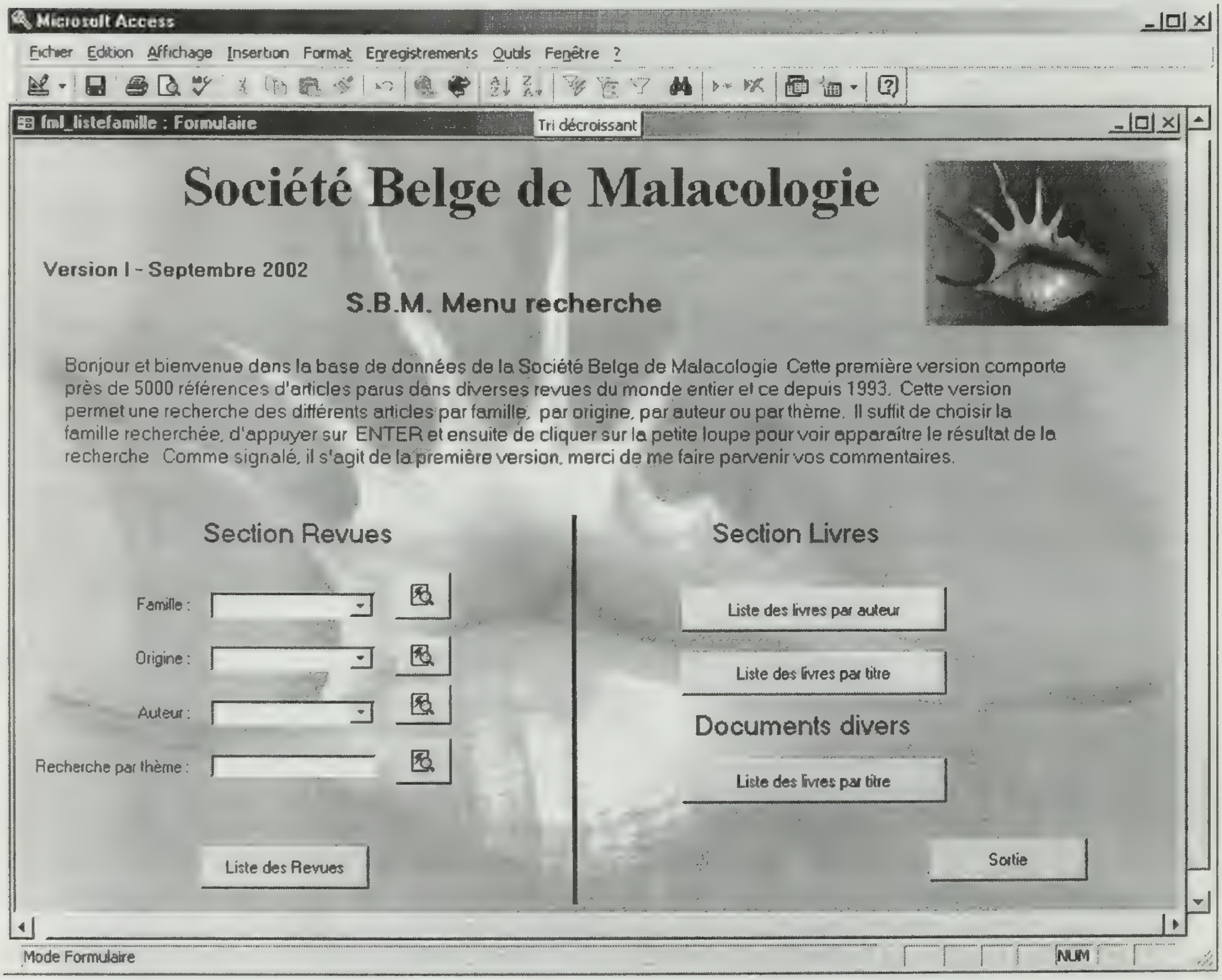
Plus de 5000 références d'articles de revues malacologiques du monde entier sont répertoriés dans une base de données.

Aujourd'hui, cette base de données est disponible sur CD-ROM (sous Access). Utilisable sur la plupart des PC, elle permet une recherche rapide des articles par auteur, par famille ou par origine. Une autre section permet de consulter les livres ainsi que des articles et travaux divers disponibles à la bibliothèque de la société.

Cette base de données est disponible au prix de 5 Euros (+ frais d'envoi) auprès d'Etienne Meuleman. (@mail : etiennemeuleman@wanadoo.be ou Tél. 087/76.41.85).

Il s'agit ici de la première version, des versions améliorées et mises à jour sortiront à l'avenir.

N'hésitez pas à commander ce CD-ROM, un outil indispensable pour les personnes intéressées par le monde des coquillages.


Microsoft Access
Fichier Edition Affichage Insertion Format Enregistrements Outils Fenêtre ?
fml_listefamille : Formulaire
Tri décroissant
Société Belge de Malacologie
Version I - Septembre 2002
S.B.M. Menu recherche
Section Revues
Famille :
Origine :
Auteur :
Recherche par thème :
Liste des Revues
Section Livres
Liste des livres par auteur
Liste des livres par titre
Documents divers
Liste des livres par titre
Sortie
Mode Formulaire
NUM

Bonjour et bienvenue dans la base de données de la Société Belge de Malacologie Cette première version comporte près de 5000 références d'articles parus dans diverses revues du monde entier et ce depuis 1993. Cette version permet une recherche des différents articles par famille, par origine, par auteur ou par thème. Il suffit de choisir la famille recherchée, d'appuyer sur ENTER et ensuite de cliquer sur la petite loupe pour voir apparaître le résultat de la recherche Comme signalé, il s'agit de la première version, merci de me faire parvenir vos commentaires.

Quelques nouvelles publications

Roland HOUART & Claude VILVENS

1. Quelques livres

A GUIDE TO COMMON SEASHELLS OF SINGAPORE

par **K.S. Tan** et **L.M. Chou**

A GUIDE TO
COMMON SEASHELLS
OF SINGAPORE
Published by
SINGAPORE SCIENCE CENTRE
Sponsored by

pp. 1-168, photographies couleurs.
Format: 10,5 X 15 cm, couverture souple
Ed. Singapore Science Center, 2000

Ce petit livre est écrit par deux auteurs de l'Université de Singapour dont K.S. Tan, réputé pour ses articles récents sur le genre *Thais* (Rapaninae). Les auteurs nous font découvrir plus de 160 espèces sur les plus de 500 répertoriées à Singapour par des auteurs récents. Dans deux chapitres intitulés "morphologie: coquille et animal; les coquilles et leurs occupants" et "classification", ils nous présentent les différentes classes, agrémentant leurs propos de quelques illustrations et de photographies couleurs et au microscope électronique (branchies, radules). D'autres courts chapitres tels la diversité des mollusques à Singapour, leur mode de vie, (reproduction, croissance, alimentation), l'évolution, l'écologie, les mollusques et l'homme, l'étude des mollusques, la nomenclature, etc., précède la partie systématique. Chaque espèce répertoriée est ensuite illustrée à l'aide de très bonnes photographies couleurs. Au fil des pages, le texte nous plonge dans une description des coquilles et dans un tableau très détaillé de la vie de ces mollusques: coquilles, mode de vie, mode de reproduction, animaux, habitats, population. Cette brochure hautement intéressante à plus d'un titre, se termine par de nombreux remerciements, quelques références, un index général (termes généraux) et un index spécifique.
Je vous conseille vivement de vous procurer cet ouvrage chez votre libraire favori! Il vous permettra non seulement d'identifier quelques espèces, mais surtout de mieux les connaître.

Roland HOUART

PANAMIC PROVINCE MOLLUSCAN LITERATURE ADDITIONS AND CHANGES FROM 1971 THROUGH 2001

III. GASTROPODA

par **Carol Skoglund**

THE FESTIVUS Vol. 33, 28 mars 2002 - Supplément.pp. i-xi, 1-286.
Format: 21,5 X 28 cm, couverture souple, reliure spirale
Prix: 35 $ US + frais d'expédition (voie aérienne): 15 $ US

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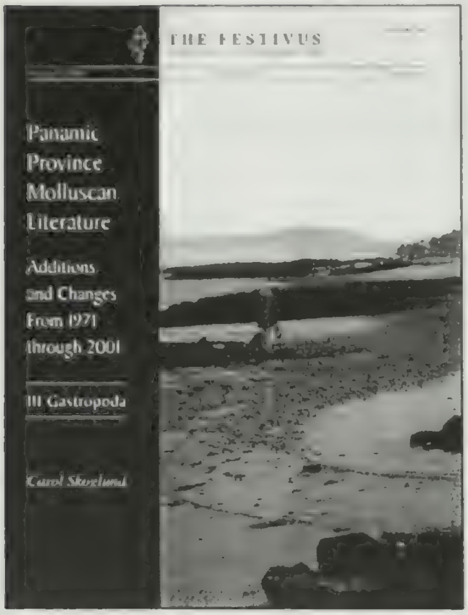
San Diego, CA 92111
E-mail: cmhertz@pacbell.net

Après les volumes dédiés aux opisthobranches, aux bivalves et aux polyplacophores (1989, 1991, 1992 et 2001) Carol Skoglund, bien connue pour sa participation à de nombreux articles sur la faune de la Province panaméenne, remet cela pour les gastéropodes.


THE FESTIVUS
Panamic Province Molluscan Literature
Additions and Changes From 1971 through 2001
III Gastropoda
Carol Skoglund

Son travail est basé sur l'œuvre monumentale que Keen publia en 1971 : Sea Shells of Tropical West America. Depuis lors de nombreuses nouvelles espèces ont été décrites, des relations taxonomiques ont été redéfinies, des synonymes ont été rétablis comme espèces distinctes et des modifications sont intervenues pour de nombreuses distributions géographiques.

Le but de cet ouvrage consiste à rassembler toutes ces nouvelles données et citations ou du moins d'en citer le plus possible, et de nous les proposer de façon claire et précise. C'est un pari que l'auteur a réussi de façon magistrale en nous présentant le résultat de ses recherches sur 228 pages. Les pages 229 à 257 sont consacrées à la bibliographie tandis que l'index occupe les dernières 29 pages.

Si vous possédez le livre de Keen (1971) alors n'hésitez pas, il vous faut ces additions, modifications et commentaires!

P.S. Renseignez-vous également pour les ouvrages précédent de Skoglund.

Roland HOUART

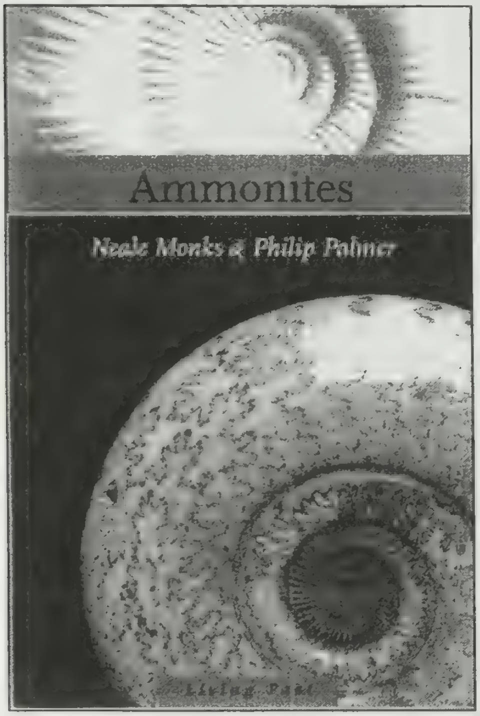
AMMONITES

par **Neale MONKS** et **Philip PALMER**

pp. 1-159, avec nombreuses photos (N/B et couleurs) et figures
Format: 155 X 235 mm, couverture souple.
ISBN: 0-565-09169-7
Prix: +/- 20 GBP (frais d'envoi.compris)

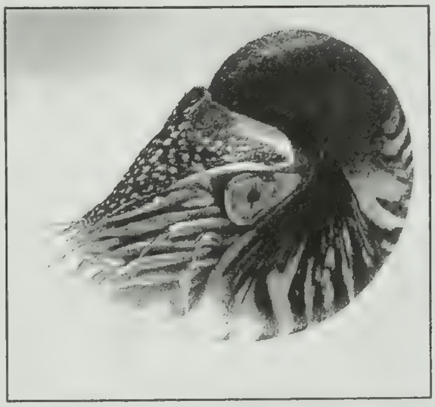
The Natural History Museum, London, 2002

Contact: NHBS LTD - Mailorder Bookstore
2-3 Wills Road, Totnes, Devon TQ9 5XN, UK
e-mail : sales@nhbs.co.uk

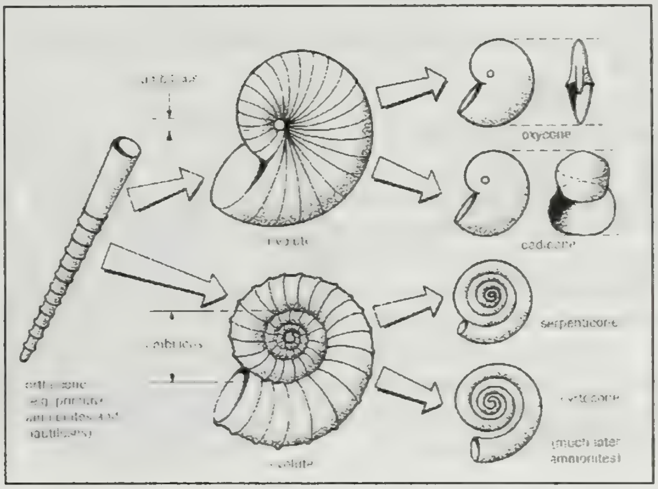


Je sais ! La plupart d'entre nous ne sont pas spécialement attirés par les Mollusques Fossiles – l'étude des Récents est déjà bien assez prenante. Cependant, ce livre-ci, dont le sujet est donc l'étude des Ammonites, ces Céphalopodes Fossiles, est extrêmement intéressant pour tout malacologue.

En effet, les auteurs, tous deux paléontologues du Natural History Museum de Londres (on disait avant "British Museum – Natural History"), ont tenté ici de retracer la vie de ces merveilleux mollusques disparus à l'heure actuelle en les comparant aux Céphalopodes encore vivant actuellement. Si bien que l'on découvre (du moins lorsque l'on n'est pas un spécialiste) toute une série d'informations sur les Nautiles, la Seiche, les Poulpes et les Calmars : leur mode de déplacement (les Ammonites partagent avec les Nautiles le système des chambres remplies de gaz au sein de la coquille), leur nourriture, leur reproduction (avec le dimorphisme sexuel), etc.



Et puis, il y a les Ammonites elles-mêmes ! Leurs coquilles sont fabuleuses : leurs formes sont très diverses, en ce sens que l'enroulement peut être serré ou très relâché et les tours peuvent être lisses ou ornés de plis. Et puis, il y a les lignes de suture des septa (les cloisons des chambres) dont le dessin peut être extrêmement compliqué et constitue un critère décisif de détermination. Sans parler du mystère de l'aptychus et de l'anaptychus : il s'agit de plaques respectivement doubles ou simples qui pourraient



être soit un opercule (mais ils ne ferment pas toute l'ouverture), soit des éléments de mandibules (mais ils sont bien grands pour cela quand on compare au bec des céphalopodes vivants).

Le livre comporte une section systématique qui présente les différents ordres d'Ammonites, avec leurs caractéristiques. Il se termine, bien logiquement, sur leur disparition à la fin de l'ère secondaire, comme il en est pour les dinosaures, mais sans que les causes soient obligatoirement identiques.

Un livre passionnant, qui permet de ne pas oublier ce monde magique des Fossiles ! J'ai pu l'acquérir sans difficultés par un simple e-mail et un numéro de carte de crédit à l'adresse indiquée ci-dessus.

Je n'ai aucun intérêt là-dedans, mais je vous conseille vraiment de vous laisser tenter …

Claude VILVENS

LES FRUITS DE LA MER ET PLANTES MARINES DES PECHES FRANCAISES

par **Jean-Claude QUERO** et **Jean-Jacques VAYNE**

pp. 1-256, avec nombreuses photos couleurs et figures
Format: 21 X 28 mm, couverture rigide.
ISBN: 2-603-01109-X
Prix: +/- 20 EUR

Ed. Delachaux-Niestlé & IFREMER, 1998

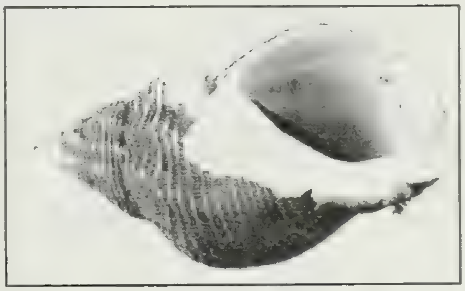
Disponibles aux Maisons de l'Environnement, Agora-Béranger, FNAC, etc.

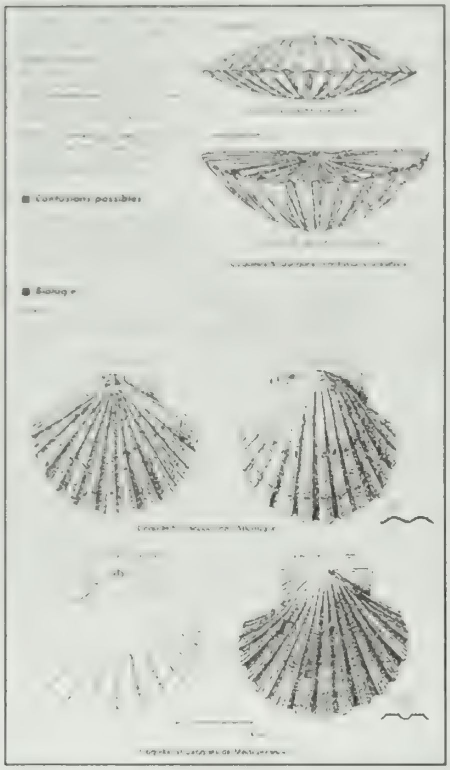
LES ENCYCLOPÉDIES DU NATURALISTE
Les fruits de la mer
ET PLANTES MARINES
DES PÊCHES FRANÇAISES
Jean-Claude Quéro • Jean-Jacques Vayne
IFREMER

De prime abord, j'ai feuilleté ce livre "juste pour voir", m'attendant à trouver une espèce de livre de cuisine portant sur les plateaux de fruits de mer – donc, le genre de livre destiné à la bonne ménagère ou au chef coq domestique ;-) … Mais je me suis vite rendu compte que ce livre avait une toute autre portée, ce dont j'aurais du me douter en constatant qu'il est paru chez Delachaux & Niestlé., dans la série "Les encyclopédies du naturaliste".

En effet, on trouve ici une description de toutes les espèces d'invertébrés marins et de plantes marines qui présentent un quelconque intérêt alimentaire, par exemple : la Coque commune, le Pétoncle vanneau, la Palourde rose, le Buccin, l'Ormeau, l'Elédone commune – la Crevette rouge, la Langoustine, l'Etrille, l'Oursin violet, l'Ouessanne, le Fucus dentelé. Pour chaque espèce, désignée par son nom vernaculaire principal et son nom latin (avec auteur et date), on trouve les rubriques suivantes :

- Classification
- Photo
- Figure(s)
- Répartition géographique sur carte
- Noms français régionaux
- Noms FAO (Food Agricultural Organization = Organisation des Nations-Unies pour l'Alimentation et l'Agriculture)
- Noms européens
- Répartition géographique
- Répartition bathymétrique
- Caractères distinctifs
- Confusions possibles





- Biologie (Mœurs, Reproduction, Croissance, Alimentation)
- Pêche
- Aquaculture
- Recette(s) et Préparation

Ce sont bien sûr moins les caractères distinctifs que les différents aspects de la biologie qui ont retenu mon attention, bien que les noms vernaculaires (liste très complète) et la pêche soient aussi fort intéressants. Et puis il y a les quelques conseils de dégustation ou préparation culinaire qui peuvent toujours servir ;-) …

En résumé, c'est le genre de livre que le naturaliste qui sommeille en chaque malacologue se doit de posséder : il constitue un très bel interface avec les profanes qui ne voient en les mollusques que des choses qui se mangent …

Claude VILVENS

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2. Quelques publications

Pour rappel, il s'agit ici de publications ne se trouvant à la bibliothèque de la SBM, mais qu'il est possible de consulter à l'IRSNB et le plus souvent à l'ULB. On peut consulter Roland Houart à ce sujet.

Genetic diversity of Oceanic Island *Lasaea* (Mollusca: Bivalvia) Lineahes Exceeds That of Continental Populations in the Northwestern Atlantic, par J.-K. Park & D. Ó Foigil. *Biol. Bull.* 198: 396-403 (2000).

* * *

Two lineages of the introduced Asian freshwater clam *Corbicula* occur in North America, par S. Siripatteawan, J.-K. Park & D. Ó Foighil. *J. Moll. Stud.* 66: 423-429 (2000).

* * *

Spaeriid and Corbiculid Clams Represent Separate Heterodont Bivalve Radiations into Freshwater Environments, par J.-K. Park & D. Ó Foighil. *Molecular Phylogenetics and Evolution* 14 (1): 75-88 (2000).

* * *

Phylogenetic relationship of mid-oceanic ridge and continental lineages of *Lasaea* spp. (Mollusca: Bivalvia) in the northeastern Atlantic, par D. Ó Foighil, R. Jennings, J.-K. Park and D. A. Merriwether. *Marine Ecology Progress Series* 213: 165-175 (2001).

RUTHENICA
Vol. 11, N°2, décembre 2001

RUTHENICA
Vol. 12, N°1, mai 2002

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ISSN 0136-0027

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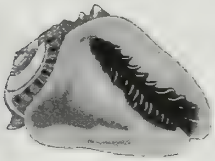

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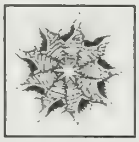
Claude VILVENS

AMERICAN CONCHOLOGIST



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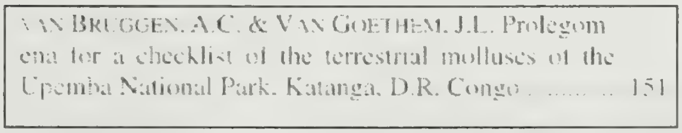

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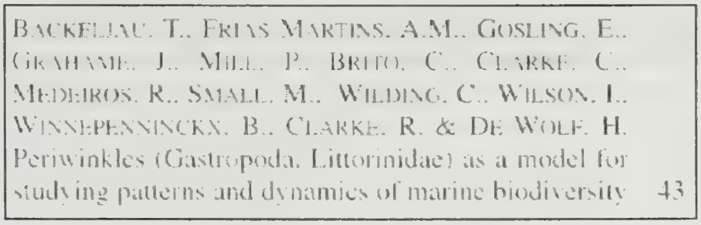

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Vol. 83, N°1-2, janvier-juin 2002

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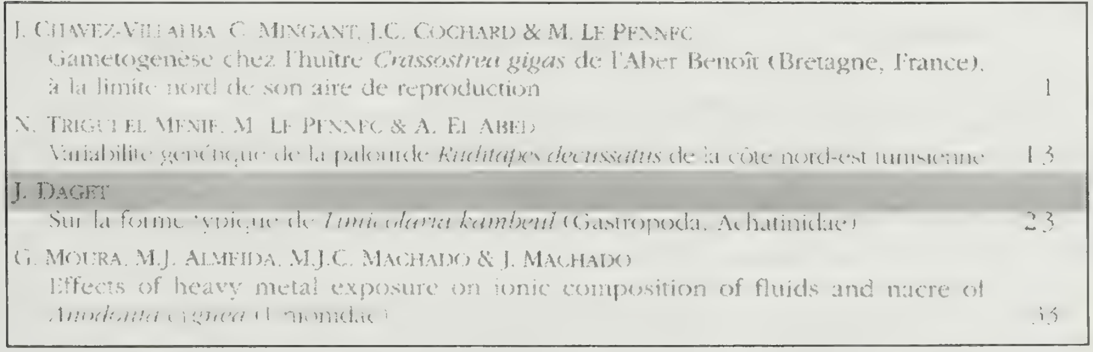

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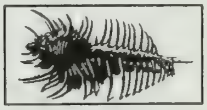

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XENOPHORA

(France)
N°99, juillet-septembre 2002

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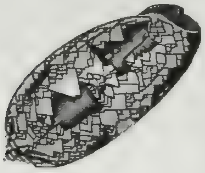


Prochaines activités de la SBM

Claude VILVENS

Lieu de réunion : Médiathèque de l'Institut St Joseph - Rue Félix Hap 14 - 1040 Bruxelles
à partir de 14h. *Sonnez et l'on vous ouvrira !*

ATTENTION ! Nos activités nous emmènent dans diverses salles (pour des projections ou des montages audio-visuels). Il ne nous est donc plus possible d'ouvrir les portes à distance après 15H.

SAMEDI 9 NOVEMBRE 2002
Christiane DELONGUEVILLE et Roland SCAILLET : Une marée en Bretagne.
Nos deux spécialistes de la malacofaune d'Europe nous emmènent dans un lieu que nous croyons bien connaître : la zone des marées et de surcroît en Bretagne ! Mais que de surprises nous attendent …

***

SAMEDI 30 NOVEMBRE 2002
Vidéo conférence : les Mollusques sur la toile !
Deux ou trois court-métrages vidéo sur les Mollusques nous seront proposés. **Roland HOUART** nous fera partager quelques unes des séquences enregistrées dont il dispose.

***

SAMEDI 14 DECEMBRE 2002
Annie LANGLEIT : Les Tellines.
Les Bivalves sont un peu les parents pauvres des collections. Notre Trésorière va y mettre bon ordre en nous emmenant dans ce monde splendide ...

***

SAMEDI 11 JANVIER 2003
Tout le monde : EXPOSITION DE LA SBM.
Le rendez-vous rituel, et bien agréable, qui est toujours le thème de la 1ère réunion de l'année nouvelle. C'est l''occasion pour chacun de montrer l'un ou l'autre aspect de la malacologie qui lui tien t à cœur. Par conséquent, il s'agit aussi d'un formidable voyage au pays des Mollusques. Invitation à tous !

***

SAMEDI 1er FEVRIER 2003
Tout le monde : ASSEMBLÉE GÉNÉRALE DE LA SBM.
-- Voir annonce officielle page suivante --
Le bilan, les projets, les souhaits, les critiques ... Tout le monde a la parole ! Il convient de le rappeler, comme de rappeler l'importance de cette Assemblée. Nous vous attendons nombreux … d'autant que cette Assemblée générale se termine toujours par une petite dégustation ☺ …

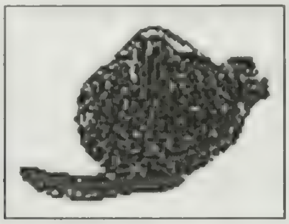
***

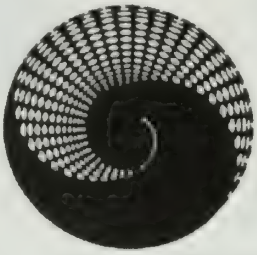
SAMEDI 22 FEVRIER 2003
Christiane DELONGUEVILLE & Roland SCAILLET : Le Finmark.
Au fait, c'est où ? Vite, le dictionnaire : "n.m., région de la Norvège septentrionale". Mais bien sûr ! Nos spécialistes des coquillages européens débusquent vraiment les mollusques partout !

***

SAMEDI 15 MARS 2003
Etienne MEULEMAN : Hommes et coquillages (suite).
LA synthèse du curieux copinage des hommes et des mollusques. Mais non, les hommes ne font pas que manger les coquillages ! Notre amateur de Strombidae les oublie quelque peu ici pour nous conter la suite de cette histoire merveilleuse.

Retenez déjà dans vos agendas les dates du 5 avril, 3 mai, des 7 et 28 juin ainsi que du 24 mai 2003 (excursion) !





L'Assemblée Générale de la Société Belge de Malacologie

Conformément aux statuts de la Société Belge de Malacologie A.S.B.L., l'Assemblée Générale Ordinaire de l'Association se tiendra le samedi **1er février 2003** à **14h** en son local de le Rue Félix Hap, 14 à 1040 Bruxelles.

Ordre du jour

- Rapport moral
- Comptes de l'exercice 2002
- Prévisions budgétaires pour l'exercice 2003
- Election ou réélection d'administrateurs (les candidatures, démissions ou demandes de réélection doivent parvenir au Président actuel pour le 15 janvier 2003 au plus tard)
- Publications de la Société
- Cotisations 2004
- Divers

Les membres sont instamment priés d'assister à l'Assemblée Générale

Nous rappelons que, conformément à l'article 6 des statuts, tout membre peut se faire représenter par un autre membre, moyennant procuration écrite. Un seul mandataire ne peut cependánt recevoir que trois mandats de l'espèce.

Pour le conseil d'administration,

M. ALEXANDRE
Secrétaire

R. HOUART
Président

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Melsbroeksestraat 21
1800 Vilvoorde - Peutie
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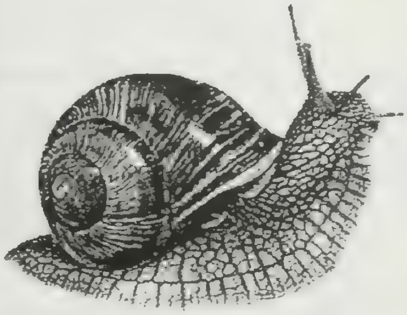

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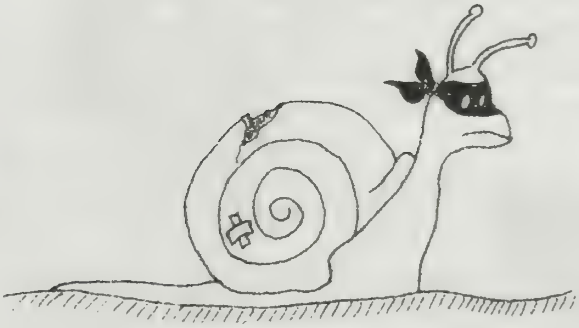

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drawing of *Achatina immaculata* courtesy Linda Davis, Natal Museum

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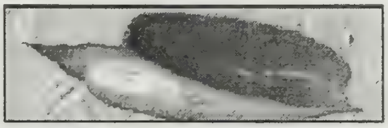
Dutch Malacological Society

Our society warmly welcomes new members (both from the Netherlands and abroad) to participate in our activities:

- **the journals (Basteria and Correspondentieblad)**
- **the meetings (usually 3-4 per year)**
- **the Internet website**
- **the library**
- **the collecting excursions**

Join us and meet new shelling friends. Further info: Bram Breure, Van Schagenplantsoen 8, NL-2741 EN Waddinxveen, The Netherlands. E-mail: abreure@xs4all.nl



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